Natural Environment Study

City of Santa Cruz, Santa Cruz County, California
Santa Cruz 7.5-Minute Quadrangle,
Township 11S, Range 2W, Section 12
05-SCr-1 PM 17.5/17.7 and 05-SCr-9 PM 0.0/0.2

EA # 465800

July 2011

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Natural Environment Study

Route 1/Route 9 Intersection Improvement Project
City of Santa Cruz, Santa Cruz County, California
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STATE OF CALIFORNIA
Department of Transportation

Prepared By: Jennifer Haire Bill Mitchell Date: 1/4/12
Jennifer Haire, Senior Wildlife Biologist; Bill Mitchell, Senior Fisheries Biologist
(916) 737-3000
ICF International
630 K Street, Suite 400 Sacramento, CA 95814

Approved By: Debbie Loh Date: 12/30/11
Debbie Loh, Project Manager
(916) 737-3000
ICF International
630 K Street, Suite 400 Sacramento, CA 95814

Approved By: Jim Walth Date: 12-30-11
Jim Walth
(805) 542-4657
Central Coast Environmental Management Branch
Caltrans District 6

Summary

Project Description

The California Department of Transportation (Caltrans) and the City of Santa Cruz (City) propose to implement improvements to the intersection at Route 1 and Route 9/River Street (Route 1/9 intersection) (proposed project) in the City of Santa Cruz, Santa Cruz County, California. The proposed project would improve traffic operations at the existing Route 1/9 intersection by widening the existing intersection to accommodate additional turning vehicle lanes, bicycle lanes, and shoulders. The additional turning lanes would alleviate congestion and provide safety benefits.

Purpose and Need

The purposes of the project are to alleviate congestion at the Route 1/9 intersection, better accommodate existing and projected traffic volumes at the Route 1/ 9 intersection, and improve safety.

Summary of Natural Communities of Concern Impacts

The natural communities of special concern in the biological study area (study area) are riparian forest and creek channel. Construction would result in a permanent loss of 0.03 acre of riparian forest in the study area. Approximately 0.04 acre of riparian forest vegetation would be temporarily disturbed during construction. There would be a permanent loss of 0.01 acre and a temporary loss of 0.01 acre of creek channel within the project area.

Summary of Special-Status Species Impacts

Special-Status Plants

Potential habitat for two sensitive plant species (California bottlebrush grass [*Elymus californicus*] and Loma Prieta hoita [*Hoita strobilina*]) is present in the study area, but the habitat is marginal due to the level of disturbance within the riparian community. These plants were not observed during surveys conducted in August 2005 and May 2011. Therefore, the study area does not support sensitive plant species, and the proposed project would not result in impacts on sensitive plant species.

Special-Status Wildlife

The following potential impacts on special-status wildlife species could result from project construction:

- Potential injury or mortality of foothill yellow-legged frog (*Rana boylii*) and western pond turtles (*Emys marmorata*), resulting from movement of construction equipment on the creek banks, placement of fill in the channel, and potential contamination of aquatic habitat.
- Permanent loss of 0.01 acre of creek channel and 0.03 acre of riparian forest that provides suitable habitat for foothill yellow-legged frog and western pond turtle. Temporary losses of 0.01 acre of creek channel and 0.04 acre of riparian forest habitats.
- Injury or mortality of California red-legged frogs (*Rana draytonii*) from movement of construction equipment on the creek banks, placement of fill in the channel, and potential contamination of aquatic habitat.
- Potential disturbance or loss of white-tailed kite (*Elanus leucurus*) or other migratory birds, if nesting in or near the project area, and permanent loss of 0.03 acre of riparian forest that provides suitable habitat for nesting birds.

Special-Status Fish

The following potential impacts on special-status fish species could result from project construction:

- Temporary increases in turbidity and sedimentation and potential discharges of contaminants into the San Lorenzo River impacting Central California Coast (CCC) steelhead and CCC coho salmon and their designated critical habitat
- Small temporary and permanent losses of riparian vegetation and aquatic habitat in the Arroyo de San Pedro Regaldo impacting CCC steelhead and CCC coho salmon and their designated critical habitat
- Potential water quality effects on tidewater goby resulting from temporary increases in turbidity and sedimentation and potential discharges of contaminants into the San Lorenzo River during construction

Heritage Trees

Construction of the project could affect as many as 25 trees that meet the criterion for a heritage tree under the City of Santa Cruz’s Heritage Tree Ordinance. The exact number of trees to be removed or trimmed will be determined during final project design.

Invasive Species

Several invasive plant species were identified within the study area. Therefore, compliance with Executive Order 13112 (Prevention and Control of Invasive Species) will be necessary for the proposed project.

Required Permits and Approvals

Caltrans/ City will obtain and implement the conditions of the following permits and authorizations:

- National Pollutant Discharge Elimination System permit
- Section 404 authorization from the U.S. Army Corps of Engineers and Clean Water Act Section 401 water quality certification from the Regional Water Quality Control Board
- Streambed Alteration Agreement from the California Department of Fish and Game
- Section 7 concurrence under the auspices of the Programmatic Biological Opinion for Projects Funded and Approved under the Federal Aid Program that the project would likely adversely affect threatened California red-legged frog
- Section 7 concurrence from the U.S. Fish and Wildlife Service that the proposed project will not adversely affect the endangered tidewater goby
- Section 7 concurrence from the National Marine Fisheries Service that the proposed project will not likely adversely affect the endangered Central California Coast coho salmon, threatened Central California Coast steelhead, and their designated critical habitat
- Heritage Tree Removal Permit from the City of Santa Cruz, if required

Mitigation Agreements

Caltrans/the City and/or its contractor will implement the following avoidance, minimization, and compensation measures, which are described in Chapter 4.

- Measure 1: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources to Be Avoided
- Measure 2: Conduct Environmental Awareness Training for Construction Employees
- Measure 3: Retain a Biological Monitor to Conduct Weekly Visits during Construction
- Measure 4: Avoid and Minimize Potential Disturbance of Riparian Communities
- Measure 5: Compensate for Temporary and Permanent Loss of Riparian Vegetation
- Measure 6: Implement Best Management Practices to Control Discharge of Construction-Related Pollutants to Surface Waters

- Measure 7: Restore Temporarily Disturbed Creek Channel Habitat and Compensate for Permanent Loss of Creek Channel Habitat
- Measure 8: Conduct Preconstruction Surveys for Foothill Yellow-Legged Frog and Western Pond Turtle and Monitor In-Creek Work if Found
- Measure 9: Implement Measures from the Programmatic Biological Opinion to Avoid and Minimize Potential Impacts on California Red-Legged Frogs and their Habitat
- Measure 10: Begin Work Prior to the Nesting Season or Conduct Preconstruction Surveys for Nesting Migratory Birds
- Measure 11: Conduct All In-Water Construction Activities during the Dry Season
- Measure 12: Bypass the Flow and Isolate the In-Channel Construction Area
- Measure 13: Dewater the Construction Site
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List of Abbreviated Terms

BA	biological assessment
BMPs	best management practices
BO	biological opinion
CalIPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CCC	Central California Coast
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
City	City of Santa Cruz
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
dbh	diameter at breast height
DPS	distinct population segment
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
ICF	ICF International
ISAC	Invasive Species Advisory Committee
MBTA	Migratory Bird Treaty Act
MOU	memorandum of understanding
MSA	Magnuson-Stevens Act
NEPA	National Environmental Policy Act
NICS	National Invasive Species Council
NMFS	National Marine Fisheries Service
NOI	notice of intent
NPDES	National Pollutant Discharge Elimination System
NWPs	nationwide permits
OHWM	ordinary high water mark
Programmatic BO	Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program
Route 1/9 intersection	intersection at Route 1 and Route 9/River Street
RPW	relatively permanent water
RWQCBs	Regional Water Quality Control Boards

SAA	streambed alteration agreement
study area	biological study area
SWANCC	*Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TNW	tributaries of navigable waters
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDRs	waste discharge requirements
WPCP	Water Pollution Prevention Plan

Chapter 1 Introduction

The California Department of Transportation (Caltrans) and City of Santa Cruz (City) propose to implement improvements to the intersection at Route 1 and Route 9/River Street (Route 1/9 intersection) (proposed project) in the City of Santa Cruz, Santa Cruz County, California (Figure 1). These roadways are under Caltrans' jurisdiction.

The proposed project would improve traffic operations at the existing Route 1/9 intersection by widening the existing intersection to accommodate additional turning vehicle lanes, bicycle lanes, and shoulders. The additional turning lanes would alleviate congestion at the intersection and provide safety benefits. The project would be funded with local, State Transportation Improvement Program, and Federal Transportation Improvement Program funds.

Although both Route 1 and Route 9 are generally considered north-south thoroughfares, in the project area, Route 1 runs east-west orientation and Route 9 runs north-south. Thus, travel lanes on Route 1 are referred to as running in an "eastbound" or "westbound" direction, and travel lanes on Route 9 are referred to as running in a "northbound" or "southbound" direction.

1.1 Purpose and Need

The purposes of the project are to alleviate congestion at the Route 1/9 intersection, better accommodate existing and projected traffic volumes at the Route 1/ 9 intersection, and improve safety.

The signalized Route 1/9 intersection is currently heavily congested. It operates at level of service C during the a.m. peak hour and level of service E during the p.m. peak hour. During the a.m. peak hour, long through vehicle queues have been observed on Route 1 in both the east and west directions extending beyond both the left- and right-turn pockets and blocking access to the turn lanes; these queues typically are able to clear the intersection during one green light phase. During the p.m. peak, a similar queuing has been observed on Route 1.

With general growth in the project area, development of the Gateway Plaza shopping center south of the intersection on River Street, and growth of the University of California at Santa Cruz, increased trip generation will result in increased congestion at the Route 1/9 intersection. The Draft Long Range Development Plan (2005–2020) for the University of California at Santa Cruz anticipates having to accommodate 21,000 full-time students. With the continued development of planned industrial and office space and increased University-related traffic, the operation and level of service of the Route 1/9 intersection will continue to deteriorate.

Traffic accident data for the Route 1/9 intersection indicates that 60 accidents occurred at this location during a 3.5-year period from January 2002 to May 2005 or 17.1 accidents per year. This accident rate exceeded the statewide average of 0.58 annual accidents at similar locations with similar traffic flows during 2002.

1.2 Project Description

A description of the proposed improvements at the Route 1/9 intersection (listed below by segment) is included below. The project design plan is shown in Figure 2. Right-of-way acquisition and temporary construction easements that would be required for the project are identified in Figure 2.

1.2.1 Route 9 (North of the Route 1/9 Intersection)

1.2.1.1 Northbound Route 9

- Add a second northbound lane and an 8-foot shoulder on northbound Route 9, from Route 1 to Fern Street, to receive vehicular and bicycle traffic from both the new left-turn lane on Route 1 and the converted shared left/through lane from northbound River Street.
- Add a 4-foot through bike lane, 12-foot right turn lane, and 4-foot shoulder on northbound Route 9, between Fern Street and Encinal Street, to accommodate bicycle through traffic, and vehicular traffic turning into the Tannery Arts Center.
- Replace channelizers with a 2-foot raised concrete median along Route 9 from Route 1 to Fern Street.

These improvements, all of which are standard lane and shoulder width dimensions, would require widening the existing roadway. Curb and gutter (at locations noted above) would be constructed along Route 9 from the Route 1/9 intersection to the south side of the Route 9/Encinal Street intersection.

An earthen embankment would be constructed to support the roadway widening over the drainage culvert (known as Arroyo de San Pedro Regaldo) located at the northeast corner of the Route 1/9 intersection. The embankment would have a 2:1 slope with the toe of the embankment extending approximately 40 feet beyond the existing roadway. The existing culvert would be extended approximately 25 feet. The existing concrete apron and cutoff wall that extend approximately 25 feet from the existing culvert would remain in place or reconstructed “in-kind”. All construction activities would be conducted during the dry season (July 1 through October 15); however because the creek is perennial, dewatering would be needed. Dewatering would be accomplished by using small check dams and bypass pipes.

Road widening may require construction of a retaining/noise wall on the east side of Route 9 between Encinal Street and the Central Home Supply’s driveway located south of Fern Street. The area along Central Home Supply is currently within Caltrans right-of-way and is being leased by Central Home Supply. The proposed improvements would also result in the removal of a number of street trees near the Route 9/Fern Street intersection.

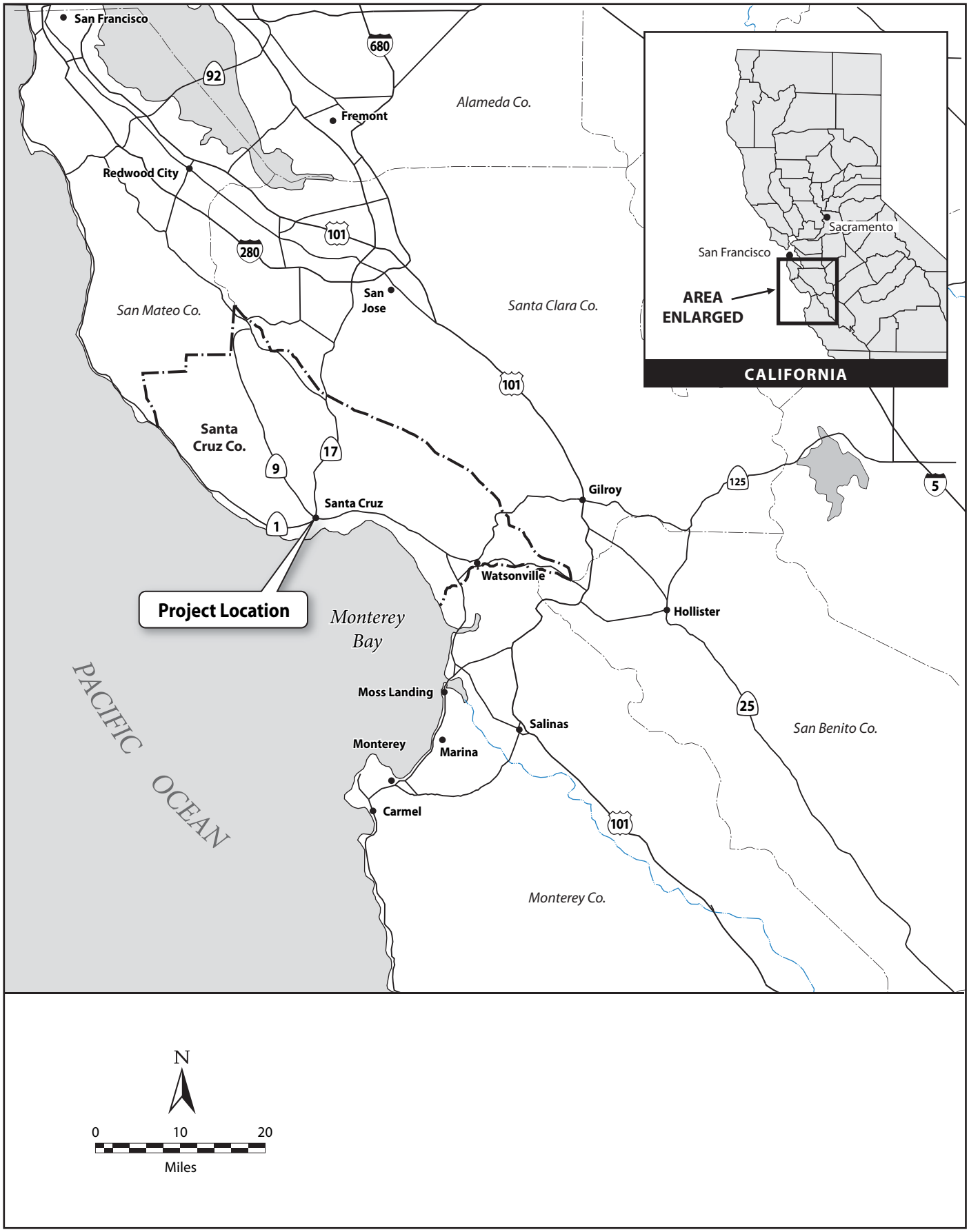

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Figure 1
Regional and Project Location

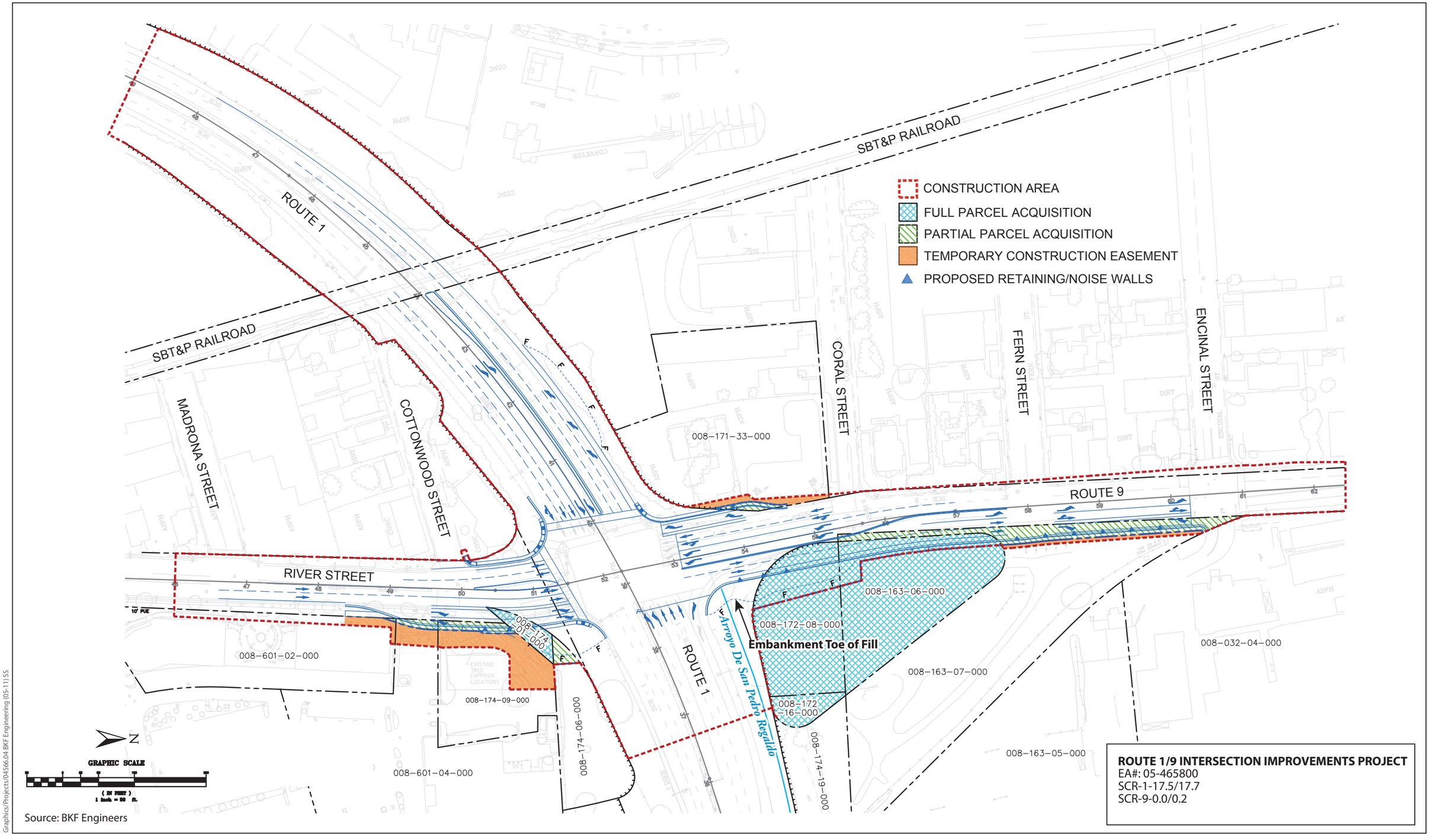

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Figure 2
Plan View

1.2.1.2 Southbound Route 9

- Add a new shared through/left turn lane on southbound Route 9 to permit a triple left onto eastbound Route 1 and two through (receiving) lanes to southbound River Street.
- Add a 4-foot through bike lane to accommodate bicycle through traffic.

These improvements, all which are standard lane and shoulder width dimensions, would require widening of the existing roadway and removal of the existing landscaping immediately adjacent to the Rebele Family Shelter that is part of the City-owned Homeless Services Center (115 Coral Street) located at the corner of Route 9 and Coral Street. The road widening may also require the reconstruction of a masonry block wall located at the corner immediately south of the Homeless Services Center and result in the removal of ornamental trees and shrubs adjacent to the masonry wall. Curb, gutter and sidewalk would be reconstructed from the Route 1/9 intersection to Coral Street. Road widening could also require the relocation of various road signs; an ornamental metal picket fence; electrical power poles; light poles along the sidewalk between Route 1 and Coral Street; an existing storm drain inlet; and an electrical box near the northwest quadrant of the Route 1/9 intersection.

1.2.2 River Street (South of the Route 1/9 Intersection)

1.2.2.1 Northbound River Street

- Revise the left turn lane to provide a shared through/left turn lane, so two lanes turn onto westbound Route 1.
- Extend the queuing length for the two right turn lanes onto eastbound Route 1.

These improvements, all of which are standard lane and shoulder width dimensions, would require widening of the existing roadway. Curb, gutter, and sidewalk would be reconstructed from the Route 1/9 intersection to a point approximately 300 feet south of the intersection. Due to the elevation difference between the roadway and the existing grade immediately southeast of the intersection, a retaining wall may be necessary to minimize impacts to the adjacent properties. Where there is sufficient room to grade, the slope would be graded to a 2:1 (horizontal: vertical) maximum slope. The existing street frontage landscaping would be removed, and the sidewalk would be narrowed from eight feet to five feet. Road widening would also result in the removal of approximately five street trees; relocation of a utility joint trench located beneath the existing sidewalk, including utility boxes, vaults, backflow preventers, roadside signs, and street lights; and reconstruction of the pedestrian and bicycle access to the Gateway Plaza shopping center. Road widening would also impact the driveway to the commercial office building located at 700/720 River Street, necessitate the removal of two redwood trees (including one of heritage size), and result in the loss of one to two onsite parking spaces along the driveway.

Additionally, the narrow concrete raised median in the middle of River Street, between Madrone Street and Cottonwood Street, would be removed and replaced with a double-yellow median stripe. The median surrounding the existing River Street gateway sign would be reconstructed to

accommodate the new alignment, and the gateway sign would need to be removed and/or relocated.

1.2.2.2 Southbound River Street

- Realign the two lanes to receive traffic from the two through lanes on southbound Route 9.

These improvements, all of which are standard lane and shoulder width dimensions, would require widening of southbound River Street from the Route 1/9 intersection to the River Street/Cottonwood Street intersection. To accommodate curb, gutter, and sidewalk (including curb returns), the street frontage landscaping, including two street trees, would be removed, and the existing sidewalk would be narrowed from eight feet to five feet. The existing street light poles and other utility facilities would be relocated due to the widening.

1.2.3 Route 1 (West of Route 1/9 Intersection)

1.2.3.1 Eastbound Route 1

- Add a left turn lane on eastbound Route 1 so that two lanes turn onto northbound Route 9.
- Remove the existing traffic signal mast arm and “pork chop” island between the right turn lane and through lane. A new signal mast arm will be installed at the curb return at the southwest corner of the intersection of Route 1/River Street, just south of the handicap ramps.
- Reconstruct the median, from the Route 1/9 intersection to the SCBT&P railroad tracks, to accommodate the additional left turn lane.

Road widening would be minor and within the Caltrans right-of-way. The crosswalk would be restriped to align with the reconstructed median.

1.2.3.2 Westbound Route 1

- Minor widening and striping realignment of westbound Route 1 due to widening associated with the second left turn lane along eastbound Route 1.

Road widening would be minor and within the Caltrans right-of-way. There would be no impacts to existing land uses or resources.

1.2.4 Route 1 (East of Route 1/9 Intersection)

1.2.4.1 Eastbound Route 1

- Minor modification to the median nose to accommodate Route 1/9 intersection improvements, including receiving the triple left-turn movement from southbound Route 9.

These improvements would not require road widening.

1.2.4.2 Westbound Route 1

There are no improvements proposed on westbound Route 1 east of the Route 1/9 intersection.

All construction access and staging will be within the construction limits as shown in Figure 2.

Chapter 2 Study Methods

This section describes the regulatory requirements that are relevant to biological resources in the study area (defined in Chapter 3) and the methods used to determine the potential for special-status species or their habitats to be present within or near the study area.

2.1 Regulatory Requirements

2.1.1 Federal Regulations

2.1.1.1 Federal Endangered Species Act

The federal Endangered Species Act (ESA) is administered by U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fishes, whereas other listed species are under USFWS jurisdiction. *Endangered* refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range; *threatened* refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future. Provisions of Sections 7 and 9 of ESA are relevant to the proposed project and are summarized below.

Endangered Species Act Prohibitions (Section 9)

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as endangered. Take of threatened species is also prohibited under Section 9, unless otherwise authorized by federal regulations. *Take*, as defined by ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures the species, including significant habitat modification." In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 9 does not prohibit take of federally listed plants on sites not under federal jurisdiction.

Endangered Species Act Authorization Process (Section 7)

Take of listed species is authorized through the Section 7 consultation process for actions by federal agencies. Federal agency actions include activities that are on federal land, conducted by a federal agency, funded by a federal agency, or authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action (the federal lead agency) must consult USFWS or NMFS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed action "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment (BA) evaluating the nature and severity of the expected effect. In response, USFWS and/or NMFS issues a biological opinion (BO), with a determination that the proposed action either:

- may jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding) or
- will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by USFWS and/or NMFS may stipulate discretionary "reasonable and prudent" conservation measures. If the proposed action would not jeopardize a listed species, USFWS and/or NMFS will issue an incidental take statement to authorize the proposed activity. Potential effects to California red-legged frog (*Rana draytonii*) will be addressed through a BO that is tiered from the Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program (U.S. Fish and Wildlife Service 2003).

2.1.1.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Act (MSA) governs the conservation and management of ocean fisheries (Magnuson-Stevens Act 1996). The purpose of the Act is to take immediate action to conserve and manage the fishery resource off the U.S. coasts and U.S. anadromous species and promote the protection of Essential Fish Habitat (EFH).

EFH is the aquatic habitat (water and substrate) necessary for fish to spawn, breed, feed, or grow to maturity that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem. EFH is described for groundfish, coastal pelagic, and Pacific salmon fisheries. Consultation with NMFS is required for all projects with the potential to affect EFH for any MSA species.

The Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 94-265), requires that:

- Federal agencies undertaking, permitting, or funding activity that may adversely affect EFH are required to consult with NMFS.
- NMFS provide conservation recommendations for any federal or state activity that may adversely affect EFH.
- Federal agencies, within 30 days of receiving conservation recommendations from NMFS, provide a detailed response in writing to NMFS regarding the conservation recommendations (the response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH, or reasons for not following the recommendations).

2.1.1.3 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) (16 USC 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10). Most actions that result in taking or in

permanent or temporary possession of a protected species constitute violations of MBTA. Examples of permitted actions that do not violate MBTA are the possession of a hunting license to pursue specific gamebirds, legitimate research activities, display in zoological gardens, banding, and other similar activities. USFWS is responsible for overseeing compliance with MBTA, and the U.S. Department of Agriculture's Animal Damage Control Officer makes recommendations on related animal protection issues.

Executive Order 13186 (January 10, 2001) directs each federal agency taking actions having or likely to have a negative impact on migratory bird populations to work with USFWS to develop a memorandum of understanding (MOU) to promote the conservation of migratory bird populations. Protocols developed under the MOU must include the following agency responsibilities:

- avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
- restore and enhance habitat of migratory birds, as practicable; and
- prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

The executive order is designed to assist federal agencies in their efforts to comply with MBTA, and does not constitute any legal authorization to take migratory birds.

2.1.1.4 Clean Water Act

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

The CWA empowers the EPA to set national water quality standards and effluent limitations and includes programs addressing both *point-source* and *nonpoint-source* pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following sections provide additional details on specific sections of the CWA.

Permits for Fill Placement in Waters and Wetlands (Section 404)

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following:

- areas within the ordinary high water mark of a stream, including nonperennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned; and

- seasonal and perennial wetlands, including coastal wetlands

On January 9, 2001, the U.S. Supreme Court made a decision in *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers* (SWANCC) [121 S.CT. 675, 2001] that affected U.S. Army Corps of Engineers' (USACE) jurisdiction in isolated waters. Based on SWANCC, the USACE no longer has jurisdiction or regulates isolated wetlands (i.e., wetlands that have no hydrologic connection with a water of the United States).

More recently, a federal ruling on two consolidated cases (June 19, 2006; *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers*), referred to as the Rapanos decision, affects whether some waters or wetlands are considered jurisdictional under the CWA. In these cases, the U.S. Supreme Court reviewed the USACE definition of *waters of the United States* and whether or not it extended out to tributaries of navigable waters (TNW) or wetlands adjacent to those tributaries. The decision provided two standards for determining jurisdiction of water bodies that are not TNWs: 1) if the non-TNW is a relatively permanent water (RPW) or is a wetland directly connected to a RPW, or 2) if the water body has "significant nexus" to a TNW. The significant nexus definition is based on the purpose of the CWA ("restore and maintain the chemical, physical, and biological integrity of the Nation's waters").

Guidance issued by EPA and USACE on the Rapanos decision requires application of the two standards and use of substantially more documentation to support a jurisdictional determination for a water body.

Applicants must obtain a permit from the USACE for all discharges of dredged or fill material into waters of the United States, including adjacent wetlands, before proceeding with a proposed activity. The USACE may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. The nationwide permits (NWPs) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met for the NWP to apply to a particular project.

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The USACE cannot issue an individual permit or verify the use of a general permit until the requirements of NEPA, the ESA, and the NHPA have been met. In addition, the USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

Permits for Stormwater Discharge (Section 402)

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by EPA. In California, the State Water Resources Control Board is authorized by EPA to oversee the NPDES program through the Regional Water Quality Control Boards (RWQCBs) (see the related discussion under "Porter-Cologne Water Quality Control Act" below). The project area is under the jurisdiction of the Central Coast RWQCB.

NPDES permits are required for projects that disturb more than 1 acre of land. The NPDES permitting process requires the applicant to file a public notice of intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the best management practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. A Section 401 Water Quality Certification from the Central Coast RWQCB would be required for wetlands and waters of the U.S. identified in the study area.

For each of the above sections of the CWA, the project applicant would obtain and comply with the applicable federal and state permits, and all conditions that are attached to those permits would be implemented as part of the proposed project. The permit conditions would be clearly identified in the in the construction plans and specifications and monitored during and after construction to ensure compliance.

2.1.1.5 Executive Order 11990: Protection of Wetlands

Executive Order (EO) 11990, signed May 24, 1977, directs all federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. Such a project (that encroaches on wetlands) may not be undertaken unless the agency has determined that (1) there are no practicable alternatives to such construction, (2) the project includes all practicable measures to minimize harm to wetlands that would be affected by the project, and (3) the impact will be minor.

2.1.1.6 Executive Order 13112: Prevention and Control of Invasive Species

EO 13112, signed February 3, 1999, directs all federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. The EO established the National Invasive Species Council (NICS), which is composed of federal agencies and departments, and a supporting Invasive Species Advisory Committee (ISAC) composed of state, local, and private entities. In 2008, the NISC released an updated national invasive species management plan (National Invasive Species Council 2008) that recommends objectives and measures to implement the EO and prevent the introduction and spread of invasive species. The EO requires consideration of invasive species in National Environmental

Policy Act (NEPA) analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them.

2.1.2 State Regulations

2.1.2.1 California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of endangered and threatened species; however, habitat destruction is not included in the state's definition of *take*. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. The California Department of Fish and Game (CDFG) administers the act and authorizes take through Section 2081 agreements (except for species designated as fully protected). CDFG can adopt a federal biological opinion as a state biological opinion under California Fish and Game Code, Section 2095. In addition, CDFG can write a consistency determination for species that are both federally and state listed if CDFG determines that the avoidance, minimization, and compensation measures will ensure no take of species.

2.1.2.2 Porter-Cologne Water Quality Control Act

California Water Code Section 13260 requires "any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the state to file a report of discharge (an application for waste discharge requirements)." Under the Porter-Cologne Act definition, waters of the state are "any surface water or groundwater, including saline waters, within the boundaries of the state." Although all waters of the United States that are within the borders of California are also waters of the state, the reverse is not true. Therefore, California retains authority to regulate discharges of waste into any waters of the state, regardless of whether the USACE has concurrent jurisdiction under CWA Section 404. If the USACE determines that a wetland is not subject to regulation under Section 404, CWA Section 401 water quality certification is not required. However, the RWQCB may impose waste discharge requirements (WDRs) if fill material is placed into waters of the state. Because fill material will be placed into the waters of the state for the proposed project, an application for water quality certification from the Central Coast RWQCB will be needed.

2.1.2.3 California Fish and Game Code

Several sections of the California Fish and Game Code (CFGC) apply to the proposed project and are described below: 1602, 3503, 3503.5, 3511, and 3513.

Section 1602: Streambed Alteration Agreements

Under CFGC 1602, public agencies are required to notify CDFG before undertaking any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resources. These modifications are formalized in a streambed alteration agreement (SAA) that becomes part of the

plans, specifications, and bid documents for the project. Because the proposed project will alter the natural flow, bed, and bank of streams in the study area, an application for an SAA will be completed.

Sections 3503 and 3503.5: Birds and Raptors

CFGC 3503 prohibits the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and destruction of raptor nests. Trees and shrubs in and adjacent to the study area provide suitable nesting habitat for birds and raptors. The City will avoid violation of CFGC 3503 and 3503.5 by implementing measures identified in Chapter 4 for nesting birds.

Section 3511: Fully Protected Birds

The CFGC provides protection from take for a variety of species, referred to as fully protected species. CFGC 3511 lists fully protected birds and prohibits take of these species. The code defines *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Except for take related to scientific research, all take of fully protected species is prohibited.

Section 3513: Migratory Birds

CFGC 3513 prohibits the take or possession of any migratory non-game bird as designated in the MBTA or any part of such migratory non-game bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. The City will avoid violation of CFGC 3513 by implementing measures identified in Chapter 4 for migratory birds.

2.1.2.4 California Native Plant Protection Act

The CNPPA of 1977 prohibits importation of rare and endangered plants into California, "take" of rare and endangered plants, and sale of rare and endangered plants. The CESA defers to the CNPPA, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to California Environmental Quality Act (CEQA). In this case, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but rather under CEQA.

2.1.3 Local Regulations

2.1.3.1 City of Santa Cruz General Plan

Chapter 10 of the City's General Plan 2030 Update Draft (City of Santa Cruz 2009) discusses natural resources and conservation. Several of the goals and policies discussed in Chapter 10 are relevant to the proposed project and are listed below.

> **Goal NRC1 Protected, enhanced, and sustainably managed creek systems, riparian environments, and wetlands**
>
> NRC1.1.1 Require setbacks and implementation of standards and guidelines for development and improvements within the city and adjacent to creeks and wetlands as set forth in the Citywide Creeks and Wetlands Management Plan.

NRC1.1.4 Re-vegetate plants native to the specific habitat in buffer/setback areas adjacent to creeks and wetlands.

NRC1.3 Encourage the restoration and enhancement of existing riparian corridors, wetlands, and water resources. NRC1.3.1 Conserve creek, riparian, and wetland resources in accordance with the adopted Creek Plan and the San Lorenzo River Plan. Cf. NRC3.1, CC3.11.

Goal NRC2 Protected, enhanced, and sustainable native and natural plant and animal communities and habitats

NRC2.1 Protect, enhance, or restore habitat for special-status plant and animal species. Cf. CD4.3.3, CC3.3.6, and NRC2.2, 2.4, and 6.3.

NRC2.1.3 Evaluate development for impacts to special-status plant and animal species.

NRC2.1.4 Implement strategies to reduce or minimize impacts.

NRC2.2 Protect sensitive habitat areas and important vegetation communities and wildlife habitat, particularly sensitive and edge habitats ("ecotones"). Cf. CD4.3.3, CC3.3.6, and NRC2.1, 2.4, and 6.3.

NRC2.2.1 As part of the CEQA review process for development projects, evaluate and mitigate potential impacts to sensitive habitat (including special-status species) for sites located within or adjacent to these areas.

NRC2.2.3 Encourage the planting and restoration of native rather than non-native vegetation throughout the city and in areas where plants or habitats are diseased or degraded.

NRC2.2.4 Minimize the impact of grading and filling on sensitive habitat areas.

2.1.3.2 City of Santa Cruz Heritage Tree and Shrub Ordinance

The City of Santa Cruz Municipal Code includes an ordinance for the preservation of heritage trees and heritage shrubs (Section 9.56). Heritage trees include all species of trees with a circumference of 44 inches or more (equivalent to a diameter of approximately 14 inches or more) measured at 54 inches above the existing grade. Under this ordinance, a tree permit from the City Parks and Recreation Department is required for trimming or removing any heritage tree or shrub. Mitigation is required for heritage tree removal, with the option of either paying a $250.00 bond for each tree to be removed and then replanting on-site or making a $150.00 donation to the City's Tree Trust fund for each tree to be removed. The replanting option requires the applicant to plant three 15-gallon trees or one 24-inch box size specimen tree for each approved tree removal.

2.1.3.3 City of Santa Cruz City-Wide Creeks and Wetlands Management Plan, Watercourse Development Permits, and Mandatory BMPs

The *City-Wide Creeks and Wetlands Management Plan* (adopted February 28, 2006) includes a riparian corridor, development setback area, and management area for the Arroyo de San Pedro Regaldo, the drainage in the study area. Under this plan and the City of Santa Cruz Municipal

Code (Section 24.08.2150), construction within the creek requires a watercourse development permit and must comply with the watercourse development standards as described in Section 24.08.2180. Construction must also comply with the Stormwater and Urban Runoff Pollution Control section of the municipal code (Section 16.19.140), which references the City's mandatory BMP's for construction activities.

2.2 Studies Required

Biological resources and potential impacts on these resources from the proposed project were identified through a literature and database review, correspondence with the USFWS, and reconnaissance field surveys. It was determined that the following studies would be required to document natural resources in the biological study area (defined in Chapter 3):

- a botanical field survey to identify plant communities, native trees, suitable habitat for sensitive plant species, and invasive plants;
- a general habitat evaluation to determine whether suitable habitat exists for sensitive animal species;
- a general habitat evaluation to determine whether suitable habitat exists for sensitive fish species;
- a site assessment for California red-legged frog (*Rana draytonii*); and
- a delineation of waters of the United States.

2.2.1 Prefield Investigation

To prepare for the field surveys, biologists reviewed existing resource information related to the project to evaluate whether sensitive species or other sensitive biological resources (e.g., wetlands) could occur in the study area and vicinity. These resources were reviewed prior to field surveys conducted in 2005 and 2007, and prior to revising this NES in 2011. The sources listed below were reviewed:

- the California Native Plant Society's (CNPS's) *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2011) (Appendix A);
- a list of sensitive species from the California Natural Diversity Database (CNDDB) records search for the U.S. Geological Survey (USGS) 7.5-minute Santa Cruz, Felton, Davenport, Laurel, and Soquel quadrangles (California Natural Diversity Database 2011) (Appendix A);
- a list of threatened and endangered species for Santa Cruz County from the USFWS Ventura Field Office website (U.S. Fish and Wildlife Service 2011a) (Appendix B); and
- the *Natural Environmental Study for the San Lorenzo River Bicycle-Pedestrian Bridge and Paths* (John Gilchrist & Associates 2003).

This information was used to develop lists of sensitive species and vegetation communities of special concern that could be present in the project vicinity, and determine the potential for

wetlands to occur in the study area. Species from the lists were considered if they were known to occur within a 10-mile radius of the study area.

2.3 Personnel and Survey Dates

Biological surveys were conducted in 2005, 2007, 2010 and 2011 in the study area by ICF International (ICF) (formerly Jones & Stokes) biologists. Methods for documenting wetland, botanical, and wildlife resources are described below.

2.3.1 Delineation of Other Waters

ICF wetland ecologist/botanist Joel Gerwein conducted a survey on August 4, 2005 to determine whether any wetlands, drainages, or other water features present in the study area could be considered waters of the United States by the U.S. Army Corps of Engineers (USACE). ICF wetland ecologist/botanist Shelly Benson delineated the ordinary high water mark (OHWM) of the Arroyo de San Pedro Regaldo, an other water of the United States, in the study area on August 7, 2009.

2.3.2 Botanical Resources

Mr. Gerwein conducted a botanical survey and assessment of potential habitat for sensitive plant species on August 4, 2005. He also evaluated trees within and adjacent to the study area to determining whether they are covered by the City of Santa Cruz Heritage Tree Ordinance. ICF botanist/wetlands ecologist Katherine Bode conducted a spring survey for sensitive plants on April 6, 2007. ICF botanist/wetlands ecologist Lisa Webber conducted an additional survey on May 20, 2011. The wetland ecologists/botanists walked meandering transects throughout the study area and identified all plant species encountered. The surveys were conducted during the appropriate identification periods for sensitive plants identified as having potential habitat in the study area. Vegetation communities in the study area were also identified and mapped during the botanical and delineation field surveys. Results of these surveys are presented in Chapters 3 and 4.

2.3.3 Wildlife Resources

ICF wildlife biologist Angela Alcala conducted a reconnaissance-level field survey of the study area on August 4, 2005. This survey focused on evaluating biological communities in the study area and determining their suitability for sensitive wildlife species. Ms. Alcala walked meandering transects throughout the study area, making notes on the types and suitability of habitat present. During this survey, Ms. Alcala also conducted a site assessment for California red-legged frog. The site assessment was based on habitat requirements described in USFWS's *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog* (U.S. Fish and Wildlife Service 2005a). She assessed the Arroyo de San Pedro Regaldo in the

study area to its confluence with the San Lorenzo River, and potential habitat within 1-mile of the study area (the San Lorenzo River).

ICF wildlife biologist Jennifer Haire conducted an updated site assessment for California red-legged frog on November 18, 2010. Ms. Haire evaluated the Arroyo de San Pedro Regaldo in the study area to its confluence with the San Lorenzo River. She also assessed potential habitat within 1-mile of the proposed project site (the San Lorenzo River, Carbonera Creek, Branciforte Creek, and two ponds). The site assessment was conducted in accordance with USFWS' guidance (U.S. Fish and Wildlife Service 2005a).

2.3.4 Fisheries Resources

ICF fisheries biologist Matthew Jones conducted a reconnaissance-level field survey of the study area on August 4, 2005. This survey focused on evaluating existing habitat conditions in the study area relative to the needs of sensitive fish species.

On June 1, 2011, fisheries biologists Rebecca Sloan and Donna Maniscalco (ICF) and Gary Kittleson (Kittleson Environmental Consulting, consulting biologist for the City of Santa Cruz) conducted a field survey of the Arroyo and the San Lorenzo River downstream to the Water Street Bridge to evaluate the potential for tidewater goby to occur in the project area.

2.4 Agency Coordination and Professional Contacts

During preparation of this document, ICF coordinated with two federal agencies, as discussed below. There was no coordination with state or local agencies.

2.4.1 Federal Agencies

2.4.1.1 U.S. Fish and Wildlife Service

On July 1, 2005, Angela Alcala contacted USFWS biologist Bill McIver by telephone for guidance on California red-legged frogs in the study area. Mr. McIver recommended that a site assessment be conducted and a report of the results be submitted to USFWS to make a determination about whether California red-legged frog surveys should be conducted in the study area.

On February 21, 2006, Ms. Alcala had a phone conversation with Mr. McIver regarding the site assessment that was conducted for California red-legged frog.

On March 6, 2006, Ms. Alcala sent a letter to the USFWS Ventura Office requesting a list of proposed, and listed endangered and threatened species that could occur in the vicinity of the proposed project. On March 13, 2006, Ms. Alcala obtained a list of species for Santa Cruz County from the Ventura Field Office website. An updated list was obtained from the web site on June 20, 2011 (U.S. Fish and Wildlife Service 2011a) (Appendix B).

On March 10, 2006, Ms. Alcala sent an email to Mr. McIver with the California red-legged frog site assessment report attached. Ms. Alcala also mailed a hard copy of the report to Mr. McIver that same day.

On March 13, 2006, Mr. McIver sent an email to Ms. Alcala stating that a request for concurrence should come from Caltrans, along with a biological evaluation. He also provided some measures that could be incorporated into the project design to avoid take of tidewater goby and California red-legged frog.

On April 16, 2009, Jennifer Haire left a voicemail message for and sent an email to David Pereksta of the Ventura Field Office. Ms. Haire also copied Chris Diel, also of the Ventura Field Office, on the email. She provided the conclusions from the 2005 California red-legged frog site assessment, information on how the project description had changed since that time, and requested assistance on whether or not protocol surveys were needed or if the same conclusions could be made.

On April 20, 2009, Mr. Diel responded to Ms. Haire's April 16, 2009 email with an email containing follow up questions, and a second email stating that protocol surveys were not recommended and that adverse impacts to California red-legged frogs were unlikely.

On October 14, 2010, Ms. Haire sent an email to Mr. Diel letting him know that the proposed project had started up again and that she wanted to discuss details of the project that she previously did not have. Mr. Diel sent an email to Ms. Haire that same day requesting that she send him the 2005 site assessment to review again.

On October 18, 2010, Ms. Haire called Mr. Diel to discuss the changes to the proposed project, including a new design option. Based on the proposed changes to the project, and the fact that the site assessment was now 5 years old, Mr. Diel requested that the site assessment be updated before he provided further guidance on California red-legged frog. He suggested that if Section 7 consultation was needed, that there was a Programmatic Biological Opinion with FHWA that could probably be used.

On October 20, 2010, Ms. Haire sent an email to Mr. Diel summarizing their conversation on October 18, 2010. Mr. Diel responded in an email October 25, 2010 stating that the summary of the conversation was accurate.

On March 24, 2011, Bill Mitchell sent an email to Mr. Diel requesting a conference call to discuss additional information on the project design, site characteristics, and the potential for occurrence of California red-legged frog and tidewater goby. Mr. Diel responded to this email on April 5, 2011. On April 6, 2011, emails were transmitted between Mr. Mitchell and Mr. Diel regarding the timing of the call and project information for the call.

Mr. Mitchell and Ms. Haire spoke with Mr. Diel by telephone on April 11, 2011. They discussed the expected impacts from the project on the Arroyo de San Pedro Regaldo (Arroyo) and the potential for tidewater goby to be present in the channel. Mr. Diel generally agreed that physical barriers could prevent tidewater goby from occurring in the Arroyo but needed to talk to the tidewater goby lead in his office before making a decision on the consultation requirements.

Regarding California red-legged frog, Mr. Diel said that he would need to review the updated site assessment before making recommendations on the need for formal consultation.

On April 12, 2011, Mr. Mitchell transmitted the updated California red-legged frog site assessment report to Mr. Diel via ICF's Secure File Transfer Site. Mr. Mitchell sent an email to follow up with Mr. Diel on April 20, 2011. Ms. Haire left a voice mail message and sent an email message on April 26, 2011, to follow up with Mr. Diel.

Mr. Diel contacted Ms. Haire by telephone on April 28, 2011. Based on the presence of suitable habitat at the project site (as described in the site assessment report) and the distribution of California red-legged frogs in Santa Cruz County, Mr. Diel said that California red-legged frogs could be present at the project site and recommended formal consultation. He also stated that tidewater goby could occur in the San Lorenzo River adjacent to the Arroyo, and that a site visit to determine if there is enough of an elevation change to preclude tidewater goby from entering the Arroyo would be beneficial. Ms. Haire summarized the conversation in an email to Mr. Diel on April 29, 2011.

On April 29, 2011, Mr. Mitchell sent an email to Mr. Diel, asking for the phone number for Chris Dellith (the tidewater goby lead) of the Ventura Fish and Wildlife Service Office. Mr. Mitchell also left a voice mail message for Mr. Dellith on this date.

Mr. Mitchell spoke with Mr. Dellith by telephone on May 12, 2011. Mr. Dellith stated that the potential exists for tidewater goby to occur in the Arroyo based on recent documentation of their occurrence well inland of tidal habitat in other streams. He also said that if there is evidence of a migration barrier either in the Arroyo (i.e., the outlet is elevated above the San Lorenzo River during normal spring flows) or San Lorenzo River (e.g., presence of steep riffles below the Arroyo) then that would be enough to preclude the presence of tidewater goby.

On [date], Caltrans provided the Ventura Fish and Wildlife Office with documentation that the project would likely adversely affect the California red-legged frog and of its intent to implement the proposed project under the auspices of the Programmatic Biological Opinion for the California red-legged Frog for Projects Funded or Approved under the Federal Highway Administration's Federal Aid Program (May 4, 2011) (Appendix D).

On [date], Caltrans sent a letter and technical memorandum to USFWS requesting concurrence that the project is not likely to adversely affect tidewater goby (Appendix E).

2.4.1.2 National Marine Fisheries Service

On March 29, 2011, ICF fisheries biologist Bill Mitchell spoke with Joe Heublein, NMFS, by telephone regarding the proposed project and potential for adverse effects on listed coho salmon and steelhead and their designated critical habitat. This conversation included a discussion of the potential for steelhead and coho salmon to occur in the study area, and proposed measures to avoid or minimize the likelihood of adverse effects to these species and their designated critical habitat.

On [date], Caltrans sent a letter to NMFS requesting concurrence that the project is not likely to adversely affect the endangered Central California Coast coho salmon, threatened Central California Coast steelhead, and their designated critical habitat. (Appendix F)

2.4.2 State Agencies

2.4.2.1 California Department of Fish and Game

There was no coordination with the California Department of Fish and Game. Coho salmon, a state-listed endangered species, is presumed to be extirpated from the San Lorenzo River.

2.4.3 Professionals

ICF biologists coordinated with Gary Kittleson (Kittleson Environmental Consulting, consulting biologist for the City of Santa Cruz) during a field survey of the Arroyo and the San Lorenzo River on June 1, 2011 to evaluate the potential for tidewater goby to occur in the study area.

2.5 Limitations That May Influence Results

The botanical surveys were conducted during the reported blooming periods of the sensitive plants identified as having potential habitat in the study area. At the time of the delineation fieldwork, indicators of hydrophytic vegetation, hydric soils, wetland hydrology, and the ordinary high water line were evident and identifiable. Therefore, there were no limitations with regard to botanical resources or wetlands and other waters in the study area.

The August 4, 2005 field survey was conducted towards the end of the breeding season (generally between February 1 and August 30) for migratory birds. No nests were noticed during field surveys, but a focused nest survey was not conducted. A focused nest survey within and adjacent to the project area will be conducted as part of the preconstruction surveys (see Chapter 4).

Chapter 3 Results: Environmental Setting

3.1 Description of Study Area and Physical and Biological Conditions

3.1.1 Biological Study Area

The 10.3 acre biological study area (study area) includes the proposed project area (i.e., where project-related ground-disturbing construction, staging, or access activities would occur), as well as natural areas adjacent to the project area (e.g., the Arroyo de San Pedro Regaldo between Route 1 and the San Lorenzo River). The study area encompasses portions of Route 1 and Route 9, a portion of the Arroyo de San Pedro Regaldo, and the Central Home Supply business. Land uses adjacent to the study area are residential, commercial, industrial, and natural/open space (along the San Lorenzo River).

3.1.2 Physical Conditions

The proposed project is located at the Route 1/9 intersection in the City of Santa Cruz, Santa Cruz County, California (Figure 1). The study area occurs within an urban, developed setting and consists mostly of roadway, sidewalks, and landscaped areas. The Arroyo de San Pedro Regaldo and associated riparian vegetation are located in the quadrant northeast of the intersection.

3.1.3 Biological Conditions

Three natural communities (creek channel, riparian, and ruderal grassland) are present in the study area (Table 1). In addition, a large portion of the study area is developed (paved roadways, road shoulders, and sidewalks). Figure 3 shows the locations of natural communities and other biological resources in the study area.

Table 1: Total Area of Natural Communities in the Study Area

Natural Communities	Extent within Study Area (acres)
Creek channel	0.1
Coast Live Oak-Arroyo Willow Riparian Forest	0.3
Ruderal and Landscaped	1.9
Total[a]	**2.3**

[a] Total area does not include 8 acre of development, including roads, sidewalks, road shoulders, and buildings.

The study area supports both common and sensitive natural communities. The ruderal community is considered a common natural community because it has low species diversity, is widespread, re-establishes naturally after disturbance, and supports primarily nonnative species. Compensation for the loss of this community is generally not required by agencies unless the specific site is habitat for or supports sensitive species (e.g., raptor foraging or nesting habitat or upland habitat in a wetland watershed). The creek channel and riparian forest communities are considered sensitive natural communities by state and federal regulatory agencies. Sensitive natural communities are characterized by high species diversity, high productivity, unusual nature, limited distribution, or declining status. Compensation for loss of sensitive communities is generally required by agencies.

Locations, dominant plant species, and typical wildlife species found in the natural communities within the study area are described below.

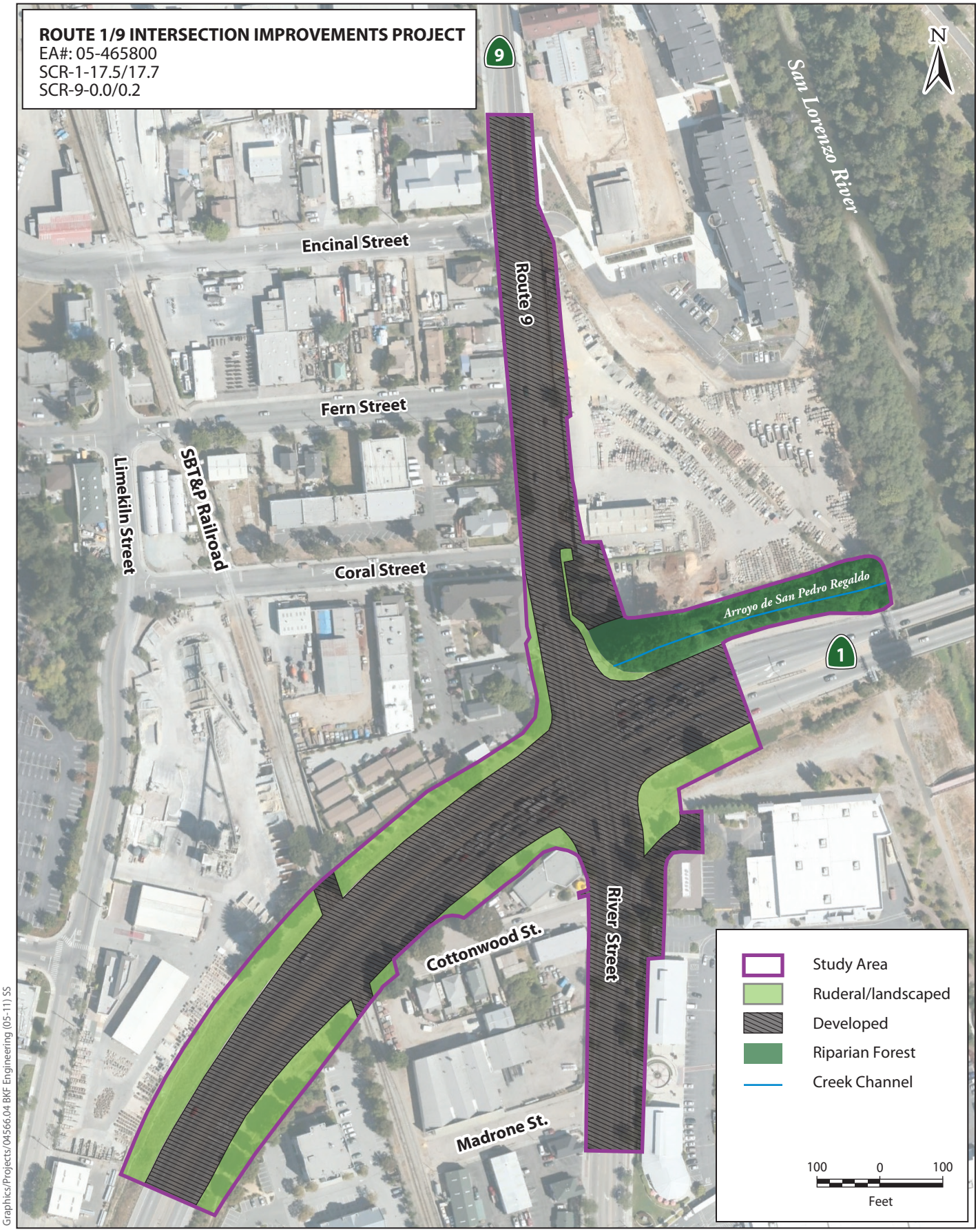
3.1.3.1 Creek Channel

The Arroyo de San Pedro Regaldo crosses under Route 9 from the west side in a 72-inch reinforced concrete pipe storm drain and surfaces on the east side of the highway. The creek flows easterly for approximately 500 feet and discharges into the San Lorenzo River (Figure 3). The OHWM of the creek ranges from 6 to 12 feet wide, and the water was 2 to 3 feet deep at the time of the August 4, 2005 and August 7, 2009 site visits, indicating that it is likely to be perennial. A report of the OHWM determination is included in Appendix C. Coast live oak-arroyo willow riparian forest grows in a narrow-bank on the creek banks. This community type is described below.

Wildlife use of this habitat type is dependent on the extent of emergent and submergent vegetation, and adjacent streamside (riparian) vegetation. Creek channels with well-vegetated areas provide food, water, and migration and dispersal corridors, as well as escape, nesting and thermal cover for many wildlife species (Mayer and Laudenslayer 1988). Wildlife species associated with stream and riparian habitats include western toad (*Bufo boreas*), California newt (*Taricha torosa*), black phoebe (*Sayornis nigricans*), Anna's hummingbird (*Calypte anna*), great egret (*Ardea alba*), belted kingfisher (*Ceryle alcyon*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*). (Zeiner et. al 1990a, 1990b.) The Arroyo de San Pedro Regaldo in the project area provides lower quality habitat for wildlife due to its proximity to urban development. The creek provides higher quality habitat closer to the San Lorenzo River.

3.1.3.2 Coast Live Oak-Arroyo Willow Riparian Forest

Riparian trees, including coast live oak (*Quercus agrifolia*) and arroyo willow (*Salix lasiolepis*) grow on the south bank of the creek, however most of the dominant trees are eucalyptus (*Eucalyptus* sp.). The understory of the riparian forest is dominated by non-native species, including Himalayan blackberry (*Rubus armeniacus*), English ivy (*Hedera helix*), and sticky eupatorium (*Ageratina adenophora*). Riparian habitat in the study area is heavily disturbed from foot traffic along the creek associated with an abandoned homeless encampment near the intersection. The riparian habitat includes more native species downstream of the project area.



Graphics/Projects/04566.04 BKF Engineering (05-11) SS

Figure 3
Natural Communities and Development in the Biological Study Area

As discussed above for the Creek Channel community type, riparian forest provides high-value habitat for wildlife. Invertebrates, amphibians, and aquatic reptiles live in aquatic and adjacent upland habitats. Raptors, herons, egrets, and other birds nest in the upper canopy. A variety of songbirds use the shrub canopy, and cavity-nesting birds, such as Nuttall's woodpecker (*Picoides nuttallii*), and oak titmouse (*Baeolophus inornatus*), occupy dying trees and snags (Zeiner et al. 1990a:388, 472). Several mammals including raccoons, Virginia opossums (*Didelphis virginiana*), and striped skunks are common in riparian habitats (Zeiner et al. 1990b: 2, 298, 316). The riparian forest in the project area provides lower quality habitat for wildlife due to its proximity to urban development. Birds that are associated with urban habitats and are accustomed to human disturbance are more likely to nest in the project area. The quality of the riparian forest increases closer to the San Lorenzo River, and species diversity likely increases in this portion of the study area.

3.1.3.3 Ruderal and Landscaped

Ruderal areas are dominated by non-native plant species, some of which are considered noxious weeds. In the study area, one ruderal area occurs at the southeast corner of the Route 1/9 intersection. During a site visit on April 6, 2007, the area was dominated by non-native grasses including ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), perennial ryegrass (*Lolium perenne*) and wild oat (*Avena fatua*). Other herbaceous species include iceplant (*Carpobrotus edulis*), yellow sweetclover (*Melilotus officinalis*), broadleaf filaree (*Erodium botrys*), and cutleaf geranium (*Geranium dissectum*). Trees located adjacent the roadways include coast live oak, stone pine (*Pinus pinaea*), and Cootamundra wattle (*Acacia baileyana*). Planted blueblossom (*Ceanothus thyrsiflorus*) and flannelbush (*Fremontodendron californicum*) shrubs and redwood (*Sequoia sempervirens*) saplings are present in landscaped areas along Route 1. Common weeds, such as bristly oxtongue (*Picris echioides*) and willow lettuce (*Lactuca saligna*), are also present.

Because ruderal and landscaped areas typically are disturbed on a regular basis by human activity, they provide low-quality habitat for wildlife. Wildlife species commonly found in urban areas are also found in ruderal and disturbed areas. Such species may include, Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), yellow-billed magpie (*Pica nuttalli*), mourning dove (*Zenaida macroura*), Virginia opossum, and striped skunk (Zeiner et al. 1990a: 310, 460, 646, 668, 682; Zeiner et al.1990b:2, 316). American kestrels (*Falco sparverius*) and red-tailed hawks (*Buteo jamaicesis*), frequently forage in this habitat (Zeiner et al. 1990a:136, 144).

3.2 Regional Species and Habitats of Concern

Tables 2 and 3 list sensitive plant and animal species that are known to occur or have the potential to occur in the geographic region. These species were identified based on the CNDDB records search (2011), CNPS Inventory of Rare and Endangered Plants (2011), species lists provided by USFWS, and species distribution and habitat requirements data.

The coast live oak-arroyo willow riparian habitat and the Arroyo de San Pedro Regaldo in the study area are considered sensitive natural communities. The California Department of Fish and

Game recognizes Central Coast Arroyo Willow Riparian Forest as a sensitive community (California Department of Fish and Game 2003).

3.2.1 Waters of the United States

Waters of the United States is an encompassing term used for areas that fall under federal jurisdiction under Section 404 of the Clean Water Act. Waters of the United States are categorized as either *wetlands* or *other waters of the United States*.

Wetlands are defined as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3[b], 40 CFR 230.3). To fall under federal jurisdiction, a wetland must support positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology, as defined in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

Other waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland characteristics (33 CFR 328.4). *Ordinary high-water mark* refers to the "line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas" (51 FR 41250, Section 328.3[e]).

As noted above, the Arroyo de San Pedro Regaldo is present in the northeast quadrant of the Route 1/9 intersection. This creek is a jurisdictional water of the United States. No wetlands were identified in the delineation of the study area (see Appendix C).

3.2.2 Sensitive Plant Species

During the pre-field investigation, 48 sensitive plant species were determined to have potential to occur in the project region (Table 2). A habitat assessment for sensitive plant species was conducted during the August 4, 2005, field survey. It was determined that two sensitive plant species, California bottlebrush grass (*Elymus californicus*) and Loma Prieta hoita (*Hoita strobilina*), could occur in riparian woodland in the study area. However, these two species would have been identifiable during the 2005 and 2011 botanical surveys, and they were not found in the study area. The remaining 46 sensitive plant species do not have potential to occur in the study area because suitable habitat conditions are lacking.

Table 2: Sensitive Plant Species in the Project Region

Scientific Name, **Common Name**	**Legal Status[a]**			**Geographic Distribution[b]**	**Habitat Requirements**	**Blooming Period**	**Habitat Present in Study Area?**	**Rationale**
	Federal	**State**	**CNPS**					
Elymus californicus California bottlebrush grass	None	None	List 4.3	Central California Coast and San Francisco Bay Area (MNT, MRN, SCR, SMT, SON Counties)	Cismontane woodland, North Coast coniferous forest, broadleafed upland forest, riparian woodland	May–Nov	Present	Habitat present in riparian community, but species not observed in August 2005 or May 2011 surveys.
Hoita strobilina Loma Prieta hoita	None	None	List 1B.1	San Francisco Bay Area (ALA*, CCA*, SCL, SCR counties)	Moist sites in chaparral, cismontane woodland, riparian woodland , usually serpentinite soil	May–Oct	Present	Habitat present in riparian community, but species not observed in August 2005 or May 2011 surveys.
Agrostis blasdalei Blasdale's bent grass	None	None	List 1B.2	Southern north coast, northern central coast, northern San Francisco Bay regions including portions of MEN, MAR, SCR, SON.	Coastal bluff scrub, coastal dunes, coastal prairie, perennial grasslands, below 330'	May–Jul	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Amsinckia lunaris bent-flowered fiddleneck	None	None	List 1B.2	Northern Coast Ranges and San Francisco Bay Area (ALA, CCA, COL, LAK, MRN, NAP, SCR, SHA, SIS, SMT, SON)	Cismontane woodland, valley and foothill grassland, coastal bluff scrub	Mar–Jun	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Anomobryum filiforme slender silver moss	None	None	List 2.2	HUM, SCR, Oregon	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest, on damp rocks and soil on outcrops	N/A	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Arctostaphylos andersonii Anderson's manzanita	None	None	List 1B.2	SCL, SCR, SMT	Chaparral; openings in and edges of broadleafed upland forest and north coast coniferous forest	Nov–Apr	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Arctostaphylos glutinosa Schreiber's manzanita	None	None	List 1B.2	SCR	Chaparral, knobcone pine forest, on mudstone or diatomaceous shale outcrops	Nov–Apr	Absent	Habitat not observed in August 2005 or May 2011 surveys.

Scientific Name, **Common Name**	**Legal Status[a]**			**Geographic Distribution[b]**	**Habitat Requirements**	**Blooming Period**	**Habitat Present in Study Area?**	**Rationale**
	Federal	**State**	**CNPS**					
Arctostaphylos ohloneana Ohlone manzanita	None	None	List 1B.2	SCR	On siliceous shale in closed-cone coniferous forest, coastal scrub	Feb–Mar	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Arctostaphylos pajaroensis Pajaro manzanita	None	None	List 1B.1	MNT, SCR*	Chaparral in sandy soils	Dec–Mar	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Arctostaphylos silvicola Bonny Doon manzanita	None	None	List 1B.2	SCR	Inland marine sands in chaparral, closed-cone coniferous forest, sand parkland, sandhill ponderosa pine forest	Feb–Mar	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Arenaria paludicola marsh sandwort	E	E	List 1B.1	LAX*, MEN, SBD*, SCR*, SFO*, SLO, Washington*	Freshwater marshes, bogs, and fens	May–Aug	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Calyptridium parryi var. *hesseae* Santa Cruz Mountains pussypaws	None	None	List 1B.1	MNT, SBT, SCL, SLO, STA, SCR	Chaparral, cismontane woodland	May–Aug	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Campanula californica swamp harebell	None	None	List 1B.2	MEN, MRN, SCR*, SON	Moist places: bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, freshwater marshes and swamps, North Coast coniferous forest	Jun–Oct	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Carex comosa bristly sedge	None	None	List 2.1	CCA, LAK, MEN, SBD*, SCR*, SFO*, SHA, SJQ, SON, Idaho, Oregon*, Washington, other states	Marshes and swamps, lake margins, valley and foothill grasslands	May–Sep	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Carex saliniformis deceiving sedge	None	None	List 1B.2	HUM, MEN, SCR*, SON	Coastal prairie, coastal scrub, meadows, coastal salt marshes	Jun	Absent	Habitat not observed in August 2005 or May 2011 surveys.

Scientific Name, **Common Name**	**Legal Status[a]**			**Geographic Distribution[b]**	**Habitat Requirements**	**Blooming Period**	**Habitat Present in Study Area?**	**Rationale**
	Federal	**State**	**CNPS**					
Chorizanthe pungens var. *hartwegiana* Ben Lomond spineflower	E	None	List 1B.1	SCR	Inland marine sands in chaparral, closed-cone coniferous forest, sand parkland, sandhill ponderosa pine forest	Apr–Jul	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Chorizanthe robusta var. *hartwegii* Scotts Valley spineflower	E	None	List 1B.1	SCR	Meadows, grasslands in sandy or mudstone soil (Purisima outcrops)	Apr–Jul	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Chorizanthe robusta var. *robusta* robust spineflower	E	None	List 1B.1	ALA*, MNT, SCL*, SCR, SMT*	Coastal dunes, coastal scrub, openings in cismontane woodland, in sandy or gravelly soil	Apr–Sep	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Collinsia multicolor San Francisco collinsia	None	None	List 1B.2	MNT, SCR, SCL, SFO, SMT	Closed-cone coniferous forest, coastal scrub sometimes in serpentinitic soil, broadleafed upland forest	Mar–May	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Dacryophyllum falcifolium tear drop moss	None	None	List 1B.3	MNT, SCR	Carbonate substrates in North Coast coniferous forest	N/A	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Didymodon norrisii Norris' beard moss	None	None	List 2.2	CCA, COL, HUM, LAK, LAX, MAD, MNT, NEV, PLU, SBT, SCR, SIE, SHA, SON, TEH, TUL, TUO; Oregon	Intermittently wet areas in rock outcrops in cismontane woodland, lower montane coniferous forest	N/A	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Eriogonum nudum var. *decurrens* Ben Lomond buckwheat	None	None	List 1B.1	SCR, ALA	Inland marine sands in chaparral, closed-cone coniferous forest, sand parkland, sandhill ponderosa pine forest	Jun–Oct	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Erysimum teretifolium Santa Cruz wallflower	E	E	List 1B.1	SCR	Inland marine sands in chaparral, closed-cone coniferous forest, sand parkland, sandhill ponderosa pine forest	Mar–Jul	Absent	Habitat not observed in August 2005 or May 2011 surveys.

Scientific Name, **Common Name**	**Legal Status[a]**			**Geographic Distribution[b]**	**Habitat Requirements**	**Blooming Period**	**Habitat Present in Study Area?**	**Rationale**
	Federal	**State**	**CNPS**					
Fissidens pauperculus minute pocket moss	None	None	List 1B.2	HUM, MNT, MRN, SCR	North Coast coniferous forest in damp soil	N/A	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Grindelia hirsutula var. *maritima* San Francisco gumplant	None	None	List 1B.2	MNT, MRN, SCR, SFO, SLO, SMT	Coastal bluff scrub, coastal scrub, valley and foothill grassland, in sandy or serpentine soil	Aug–Sep	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Hesperocyparis abramsiana var. *abramsiana* Santa Cruz cypress	E	E	List 1B.2	SCR, SMT	Closed-cone coniferous forest, sandhill ponderosa pine forest on sandstone or granitic substrate	N/A	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Holocarpha macradenia Santa Cruz tarplant	T	E	List 1B.1	ALA*, CCA*, MNT, MRN*, SCR	Coastal prairie, valley and foothill grassland, often in clay soils	Jun–Oct	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Horkelia cuneata ssp. *sericea* Kellogg's horkelia	None	None	List 1B.1	ALA*, MRN*, MNT, SBA, SCR, SFO*, SLO, SMT	Openings in closed-cone coniferous forest, maritime chaparral, coastal scrub, coastal prairie, in sandy or gravelly soil	Apr–Sep	Absent	Habitat not observed in August 2005 or May 2011 surveys..
Horkelia marinensis Point Reyes horkelia	None	None	List 1B.2	MEN, MRN, SCR, SMT	Coastal dunes, coastal prairie, coastal scrub in sandy soil	May–Sep	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Lessingia micradenia var. *glabrata* smooth lessingia	None	None	List 1B.2	Endemic to SCL	On serpentinite in chaparral, oak woodland, often on roadsides	Jul–Nov	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Malacothamnus arcuatus arcuate bush mallow	None	None	List 1B.2	SCL, SCR, SMT	Chaparral	Apr–Sep	Absent	Habitat not observed in August 2005 or May 2011 surveys.

Scientific Name, **Common Name**	**Legal Status[a]**			**Geographic Distribution[b]**	**Habitat Requirements**	**Blooming Period**	**Habitat Present in Study Area?**	**Rationale**
	Federal	**State**	**CNPS**					
Micropus amphibolus Mt. Diablo cottonweed	None	None	List 3.2	ALA, CCA, COL, LAK, MNT, MRN, NAP, SBA, SCL, SCR, SJQ, SLO, SOL, SON	Rocky sites in broadleafed upland forest, mixed evergreen forest, oak woodland, chaparral, valley and foothill grasslands	Mar–May	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Microseris paludosa marsh microseris	None	None	List 1B.2	MEN, MNT, MRN, SCR, SFO*, SLO, SMT*, SON	Moist places in closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland	Apr–Jun	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Mielichhoferia elongata elongate copper moss	None	None	List 2.2	FRE, MPA, SCR, TRI, TUL, widespread outside California	Cismontane woodland on metamorphic rock, usually vernally wet	N/A	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Monolopia gracilens woodland woollythreads	None	None	List 1B.2	ALA, CCA, MNT, SLO, SCL, SCR, SMT	Serpentinite soils in openings in broadleafed upland forest, chaparral, cismontane woodland, and North Coast coniferous forest, and valley and foothill grassland	Mar–Jul	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Pedicularis dudleyi Dudley's lousewort	None	R	List 1B.2	MNT, SCR*, SLO, SMT	Maritime chaparral, North Coast coniferous forest, valley and foothill grassland	Apr–Jun	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Penstemon rattanii var. *kleei* Santa Cruz Mountains beardtongue	None	None	List 1B.2	SCL, SCR	Chaparral, lower montane coniferous forest, North Coast coniferous forest, often in sandy soil	May–Jun	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Pentachaeta bellidiflora white-rayed pentachaeta	E	E	List 1B.1	MRN*, SCR*, SMT	Valley and foothill grassland, coastal scrub, coastal prairie	Mar–May	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Pinus radiata Monterey pine	None	None	List 1B.1	MNT, SCR, SLO, SMT; Baja California, Guadalupe Island (Mexico)	Closed-cone coniferous forest, cismontane woodland	N/A	Absent	Habitat not observed in August 2005 or May 2011 surveys.

Scientific Name, **Common Name**	**Legal Status[a]**			**Geographic Distribution[b]**	**Habitat Requirements**	**Blooming Period**	**Habitat Present in Study Area?**	**Rationale**
	Federal	**State**	**CNPS**					
Piperia candida white-flowered rein orchid	None	None	List 1B.2	DNT, HUM, MEN, SCR, SIS, SMT, SON, TRI; Oregon, Washington	Broadleaved upland forest, lower montane coniferous forest, North Coast coniferous forest, sometimes on serpentinite	May–Sep	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Plagiobothrys chorisianus var. *chorisianus* Choris' popcornflower	None	None	List 1B.2	SCR, SFO, SMT	Mesic areas in chaparral, coastal scrub, and coastal prairie	Mar–Jun	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Plagiobothrys diffusus San Francisco popcornflower	None	E	List 1B.1	ALA, SCR, SFO*	Coastal prairie; valley and foothill grassland	Mar–Jun	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Polygonum hickmanii Scotts Valley polygonum	E	E	List 1B.1	SCR	Grassland in mudstone or sandstone	May–Aug	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Rosa pinetorum pine rose	None	None	List 1B.2	MNT, SCR, and possibly SMT	Closed-cone coniferous forest	May–Jul	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Sidalcea malachroides Maple-leaved checkerbloom	None	None	List 4.2	DNT, HUM, MEN, MNT, SCL, SCR, SON, Oregon	Broadleafed upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, often in disturbed places	Apr–Aug	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Silene verecunda *ssp.* verecunda *San Francisco campion*	None	None	List 1B.2	SCR, SFO, SMT	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland, generally in sandy or rocky soil	Mar–Aug	Absent	Habitat not observed in August 2005 or May 2011 surveys.
Stebbinsoseris decipiens *Santa Cruz microseris*	None	None	List 1B.2	MNT, MRN, SCR	Open areas in broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub	Apr–May	Absent	Habitat not observed in August 2005 or May 2011 surveys..

Scientific Name, **Common Name**	**Legal Status[a]**			**Geographic Distribution[b]**	**Habitat Requirements**	**Blooming Period**	**Habitat Present in Study Area?**	**Rationale**
	Federal	**State**	**CNPS**					
Trifolium buckwestiorum *Santa Cruz clover*	None	None	List 1B.1	MNT, SCR, SON	Coastal prairie, broadleafed upland forest, cismontane woodland	Apr–Oct	Absent	Habitat not observed in August 2005 or May 2011 surveys.

[a] Status explanations:
– = no listing.
Federal
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
State
E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
R = listed as rare under the California Native Plant Protection Act; this category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.
California Native Plant Society
1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
4 = List 4 species: limited distribution—a watch list.
CNPS Code Extensions:
.1 = seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = fairly endangered in California (20- 80% of occurrences threatened)
.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

[b] County abbreviations are as follows.

ALA: Alameda	LAK: Lake	NEV: Nevada	SCZ: Santa Cruz Island (SBA Co.)	SON: Sonoma
AMA: Amador	LAX: Los Angeles	ORA: Orange	SDG: San Diego	SRO: Santa Rosa Island (SBA Co.)
BUT: Butte	MAD: Madera	PLA: Placer	SFO: San Francisco	STA: Stanislaus
CCA: Contra Costa	MEN: Mendocino	PLU: Plumas	SHA: Shasta	TEH: Tehama
COL: Colusa	MER: Merced	SAC: Sacramento	SIE: Sierra	TRI: Trinity
DNT: Del Norte	MNT: Monterey	SBA: Santa Barbara	SIS: Siskiyou	TUL: Tulare
FRE: Fresno	MOD: Modoc	SBD: San Bernardino	SJQ: San Joaquin	TUO: Tuolumne
GLE: Glenn	MPA: Mariposa	SBT: San Benito	SLO: San Luis Obispo	VEN: Ventura
HUM: Humboldt	MRN: Marin	SCL: Santa Clara	SMT: San Mateo	YUB: Yuba
KRN: Kern	NAP: Napa	SCR: Santa Cruz	SOL: Solano	

* Known populations believed extirpated from that county.

Table 3: Sensitive Animal Species Potentially Occurring in the Project Region

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Rationale
	Federal	State				
Invertebrates						
Zayante band-winged grasshopper Trimerotropis infantilis	E	–	Zayante sand hills in the Santa Cruz Mountains, Santa Cruz County	Open sandy areas with sparse low annual and perennial herbs on high ridges with sparse ponderosa pine	Absent	Open sandy areas with sparse vegetation are not present; study area is outside of species known range
Ohlone tiger beetle *Cicindela ohlone*	E	–	Known from 15 locations in Santa Cruz County California, including Scotts Valley, UCSC, Pogonip, and Santa Cruz Gardens.	Coastal prairie and open grassland on Watsonville loam soils with barren areas for foraging and thermoregulation	Absent	Coastal prairie/ open grassland with barren areas not present in the study area.
Mount Hermon (=barbate) June beetle *Polyphylla barbata*	E	–	Zayante sand hills at Mount Hermon, Santa Cruz County	Sand parkland, silver-leaf manzanita scrub, and ponderosa pine-chaparral habitats with sandy soil and open, sparsely vegetated areas	Absent	Open sandy areas with sparse vegetation are not present; study area is outside of species known range
Smith's blue butterfly *Euphilotes (=Shijimiaeoides) enoptes smithi*	E	–	Localized populations along the immediate coast and in coastal canyons of Monterey County; single populations reported in Santa Cruz and San Mateo Counties	Coastal dunes and hillsides that support seacliff buckwheat (*Eriogonum parvifolium*) or coast buckwheat (*Eriogonum latifolium*); these plants used as a nectar source for adults and host plant for larvae	Absent	Coastal dunes /hillsides with buckwheat not present in the study area.
Fish						
Tidewater goby *Eucyclogobius newberryi*	E	SSC	The tidewater goby, found only in California, historically occurred in at least 87 California coastal lagoons from San Diego County to Humboldt County.	Restricted to coastal brackish shallow lagoons and lower stream reaches where the water is fairly still but not stagnant.	Absent	Species is only known to occur in lagoon, one mile downstream from study area. This species is known to occur in other streams up to several miles upstream of brackish habitat, but stream gradient and swift currents in San Lorenzo River downstream of study area likely preclude species occurrence in study area.
Central California Coast Steelhead *Oncorhynchus mykiss*	T	–	Population range is from Russian River, south to Soquel Creek and to, but not including, the Pajaro River. Also found in the San Francisco and San Pablo Bay Basins.	Requires silt free gravel for spawning. Juveniles require cool water, refuge cover, and sufficient dissolved oxygen.	Present	The San Lorenzo River in the vicinity of the study area is within the designated critical habitat of CCC steelhead. This reach serves as a migratory pathway for adults and juveniles, and provides limited summer rearing habitat for juveniles.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Rationale
	Federal	State				
Central California Coast Coho *Oncorhynchus kisutch*	E	E	Population includes all naturally spawned populations of coho salmon from Punta Gorda in northern California south to and including the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system, as well four artificial propagation programs.	Spawns in loose, silt free coarse gravel. Requires sufficient fall streamflow for spawning.	Present	The San Lorenzo River in the vicinity of the study area is within the designated critical habitat of CCC coho salmon. This reach serves as a migratory pathway for adults and juveniles.
Amphibians						
California tiger salamander *Ambystoma californiense*	T	T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet above sea level and coastal region from Butte County to northeastern San Luis Obispo County	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for breeding; rodent burrows, rock crevices, or fallen logs for cover for adults and juveniles for summer dormancy.	Absent	No vernal pools or other suitable aquatic habitat are present in or near the study area. Upland habitat (grassland/oak woodland with aestivation sites) not present.
Santa Cruz long-toed salamander *Ambystoma macrodactylum croceum*	E	E	Small populations and breeding sites in southern Santa Cruz County and northern Monterey County	Lifetime spent mostly underground in willow groves, coastal scrub, coast live oak, or dense riparian habitats; migrates to breeding ponds in early to late winter, and juveniles disperse from the pond in September.	Absent	There are no suitable breeding ponds near the study area and riparian vegetation in the study area is unlikely to support this salamander. In addition, it inhabits a very limited range.
Foothill yellow-legged frog *Rana boylii*	–	SSC	Klamath, Cascade, north Coast, south Coast, and Transverse Ranges; through the Sierra Nevada foothills up to approximately 6,000 feet above sea level, south to Kern County	Creeks or rivers in woodlands or forests with rock and gravel substrate and low overhanging vegetation along the edge; usually found near riffles with rocks and sunny banks nearby	Present	The Arroyo de San Pedro Regaldo provides suitable refuge habitat. May breed in the San Lorenzo River, but no occurrences reported in the CNDDB (2011).
California red-legged frog *Rana draytonii*	T	SSC	Along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehema County to Fresno County.	Permanent and semi-permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods.	Present	The Arroyo de San Pedro Regaldo provides suitable breeding and refuge habitat.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Rationale
	Federal	State				
Reptiles						
Western pond turtle *Emys marmorata*	–	SSC	Occurs throughout California west of the Sierra-Cascade crest. Found from sea level to 6,000 feet. Does not occur in desert regions except for along the Mojave River and its tributaries	Occupies aquatic habitats, such as ponds, marshes, or streams, with rocky or muddy bottoms in woodlands, grasslands, and open forests. Also requires aquatic vegetation for cover and food. Nests in upland adjacent to aquatic habitat.	Present	The Arroyo de San Pedro Regaldo provides suitable habitat. Turtles are more likely to occur within and along the San Lorenzo River. The project area does not contain suitable upland habitat for nesting, due to the amount of disturbance in and near this area.
Blunt-nosed leopard lizard *Gambelia sila*	E	E, FP	San Joaquin Valley from Stanislaus County through Kern County and along the eastern edges of San Luis Obispo and San Benito Counties	Open habitats with scattered low bushes on alkali flats, and low foothills, canyon floors, plains, washes, and arroyos; substrates may range from sandy or gravelly soils to hardpan	Absent	Open habitats with scattered low bushes not present; study area is outside of species known range.
San Francisco garter snake *Thamnophis sirtalis tetrataenia*	E	E	Northern San Mateo County southward along the coast and the eastern slope of the Santa Cruz Mountains to the Santa Clara County line	Favors ponds, lakes, slow moving streams and marshy areas containing abundant vegetation, which it uses for cover; nearby upland habitat is important during fall and winter	Present	The Arroyo de San Pedro Regaldo may provide suitable habitat but the study area is outside of the species known range (i.e., it is on the western slope of the Santa Cruz Mountains).
Birds						
California condor *Gymnogyps californianus*	E	E, FP	Historically, rugged mountain ranges surrounding the southern San Joaquin Valley; currently, most individuals are in captive populations, but a few birds were recently released in the rugged portions of the Los Padres National Forest	Requires large blocks of open savanna, grasslands, and foothill chaparral with large trees, cliffs, and snags for roosting and nesting	Absent	Large blocks of open area with suitable nesting sites not present.
White-tailed kite *Elanus leucurus*	–	FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills, to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Present	Unlikely to nest in the project area but may nest along the San Lorenzo River. No suitable foraging habitat is present in the study area.
California clapper rail *Rallus longirostris oboletus*	E	–	Marshes around San Francisco Bay and east through the Sacramento River–San Joaquin River Delta to Suisun Marsh.	Restricted to salt marshes and tidal sloughs. Usually associated with heavy growth of pickleweed. Feeds on mollusks removed from the mud in sloughs.	Absent	Salt marsh/tidal slough not present in the study area.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Rationale
	Federal	State				
Western snowy plover *Charadrius alexandrinus nivosus*	T	SSC	Nests along the entire coast of California from Del Norte to San Diego County adjacent to or near tidal waters, including along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Nests at inland lakes throughout northeastern, central, and southern California, including Mono Lake and Salton Sea.	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent. Inland, they require barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds and riverine sand bars; also along sewage, salt-evaporation, and agricultural waste-water ponds.	Absent	No sandy beach habitat used by nesting snowy plovers occurs in the study area.
California least tern *Sterna antillarum browni*	E	E, FP	Nests on beaches along the San Francisco Bay and along the southern California coast from southern San Luis Obispo County south to San Diego County	Nests on sandy, upper ocean beaches, and occasionally uses mudflats; forages on adjacent surf line, estuaries, or the open ocean.	Absent	Beaches, mudflats, and estuaries not present in the study area.
Marbled murrelet *Brachyramphus marmoratus*	T	E	Nesting sites from the Oregon border to Eureka and between Santa Cruz and Half Moon Bay; winters in nearshore and offshore waters along the entire California coastline	Mature, coastal coniferous forests for nesting; nearby coastal water for foraging; nests in conifer stands greater than 150 years old and may be found up to 35 miles inland; winters on subtidal and pelagic waters often well offshore.	Absent	Conifer forest not present in the study area.
Western burrowing owl *Athene cunicularia hypugea*	–	SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows	Absent	Open grassland not present in the study area.
Black swift *Cypseloides niger* (nesting)	–	SSC	Breeds very locally in the Sierra Nevada and Cascade Range, the San Gabriel, San Bernardino, and San Jacinto mountains, and in coastal bluffs from San Mateo County south to near San Luis Obispo County	Nests in moist crevice or cave on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons	Absent	Caves/ cliffs not present in the study area.
Southwestern willow flycatcher *Empidonax traillii extimus*	E	E	Breeds in Santa Barbara, Ventura, Los Angeles, Orange, San Diego, Imperial, Riverside, San Bernardino, Kern, and Inyo Counties	Densely vegetated riparian habitat with streamside associations of cottonwoods and willows	Present	No suitable habitat in project area but suitable habitat present at eastern portion of the Arroyo de San Pedro Regaldo and San Lorenzo River. No known occurrences in Santa Cruz County (CNDDB 2011b) and considered unlikely to occur.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Rationale
	Federal	State				
Least Bell's vireo *Vireo bellii pusillus*	E	E	Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties	Riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons	Present	No suitable habitat in project area but suitable habitat present at eastern portion of the Arroyo de San Pedro Regaldo and San Lorenzo River. No known occurrences in Santa Cruz County (CNDDB 2011b) and considered unlikely to occur.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	–	SSC	Found only in the San Francisco Bay Area in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda Counties	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover	Absent	No freshwater or saltwater marsh present in the study area.
Tricolored blackbird *Agelaius tricolor*	–	SSC	Largely endemic to California; permanent residents in the Central Valley from Butte County to Kern County; at scattered coastal locations from Marin County south to San Diego County; breeds at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields; nesting habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony; requires large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots, where insect prey is abundant	Absent	No emergent marsh, grainfields, or grassland with suitable nesting substrate is present in the study area.
Mammals						
Pallid bat *Antrozous pallidus*	–	SSC	Occurs throughout California except the high Sierra from Shasta to Kern County and the northwest coast, primarily at lower and mid elevations	Occurs in a variety of habitats from desert to coniferous forest. Most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Relies heavily on trees for roosts	Absent	No hollow trees that could provide suitable roosting habitat are present in the study area. Could forage in study area if suitable roosting sites present along the San Lorenzo River.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	–	SSC	West side of Mount Diablo to coast and San Francisco Bay	Present in chaparral habitat and in forest habitats with a moderate understory	Absent	No chaparral/forest habitat in study area. Only one known occurrence in Santa Cruz County (BNDDB 2011b).
American badger *Taxidea taxus*	–	SSC	Throughout California, except for the humid coastal forests of northwestern California in Del Norte and the northwestern Humboldt Counties	Requires sufficient food, friable soils, and relatively open uncultivated ground; preferred habitat includes grasslands, savannas, and mountain meadows near timberline	Absent	No grassland or savanna in the study area

Table 3: Continued

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Rationale
	Federal	State				
Southern sea otter *Enhydra lutris nereis*	T	FP	Occurs approximately from the vicinity of Half Moon Bay south to Gaviota, California. Approximately 20 otters, including pups, are at San Nicolas Island as a result of translocation efforts to establish an experimental population	Coastal waters, typically within 1 km of shoreline. Often associated with kelp beds	Absent	No coastal water within study area.

[a] Status explanations:
– = no listing.
Federal
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
State
E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.

3.2.3 Sensitive Wildlife Species

Based on the CNDDB records search and the USFWS species list obtained for Santa Cruz County, 27 sensitive wildlife species were identified during the prefield review as having the potential to occur within the project region. The legal status, geographic range, and habitat requirements for each of these species are listed in Table 3.

After a review of species distribution and habitat requirements data and field surveys, it was determined that 20 of the 27 species identified would not occur in the study area because it lacks suitable habitat. Three additional species for which suitable habitat is present in the study area were determined to be very unlikely to occur because the study area is outside of the species known range. An explanation for the absence of each of these species from the study area is provided in Table 3. The remaining four species (foothill yellow-legged frog, California red-legged frog, western pond turtle, and white-tailed kite), are discussed in Chapter 4.

3.2.4 Sensitive Fish Species

Based on a review of existing information, including a search of the CNDDB, USFWS species lists, and species distribution and habitat requirements data, three sensitive fish species were identified during the review as having the potential to occur within the project region. The legal status, geographic range, and habitat requirements for each of these species are provided in Table 3.

3.2.5 Heritage Trees

Heritage trees include all species of trees with a circumference of 44 inches or more (equivalent to a diameter of approximately 14 inches or more) measured at 54 inches above the existing grade. A coast redwood (*Sequoia sempervirens*) with a diameter at breast height (dbh) greater than 14 inches is located directly on the border between City of Santa Cruz property and private property. Several eucalyptus trees within the riparian forest in the study area also meet the heritage tree size criterion. Approximately 25 trees in the study area meet the heritage tree size criterion.

3.2.6 Invasive Species

Invasive plants include species designated as federal noxious weeds by the U.S. Department of Agriculture, species listed by the California Department of Food and Agriculture, and other invasive plants identified by California Invasive Plant Council (CalIPC). Roads, highways, and related construction projects are some of the principal dispersal vectors for invasive plants. Invasive plant species were observed in the understory of the riparian forest, and in the ruderal area (Table 4). Therefore, compliance with Executive Order 13112 (Prevention and Control of Invasive Species) will be necessary for this project.

Table 4: Invasive Plant Species Observed in the Study Area

Community Location	Scientific Name	Common Name	California Invasive Plant Council Rating[a]
Riparian	*Ageratina adenophora*	Sticky eupatorium	High
Ruderal	*Avena fatua*	Wild oats	Moderate
Ruderal	*Bromus diandrus*	Ripgut brome	High
Ruderal	*Bromus madritensis* ssp. *rubens*	Red brome	High
Ruderal	*Carpobrotus edulis*	Iceplant	High
Riparian	*Hedera helix*	English ivy	Moderate
Riparian	*Rubus armeniacus*	Himalayan blackberry	High

[a] California Invasive Plant Council (2006) Rating Definitions:

High: ecological impacts severe; moderate to high rates of dispersal and establishment; widely distributed

Moderate: ecological impacts substantial and apparent; moderate to high rates of dispersal but establishment depends on ecological disturbance; limited to widely distributed

Limited: ecological impacts minor on statewide level or not enough information to justify higher score; low to moderate rates of invasiveness, distribution limited but locally persistent

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

4.1 Natural Communities of Special Concern

4.1.1 Riparian Forest

Coast live oak-arroyo willow riparian forest vegetation occurs along the Arroyo de San Pedro Regaldo within the study area.

4.1.1.1 Survey Results

Riparian trees, including coast live oak and arroyo willow grow on the south bank of the creek; however most of the dominant trees are eucalyptus. The understory of the riparian forest is dominated by non-native species, including Himalayan blackberry, English ivy, and sticky eupatorium. Riparian habitat in the study area is heavily disturbed from foot traffic along the creek associated with a homeless encampment near the intersection. The riparian habitat includes more native species downstream of the project area.

Riparian communities are considered sensitive locally, regionally, and statewide because of their habitat value and decline in extent. CDFG has adopted a no-net-loss policy for riparian habitat values, and the SAA would include mitigation requirements for loss of riparian vegetation. USFWS mitigation policy identifies California's riparian habitats in Resource Category 2, for which no net loss of existing habitat value is recommended (46 FR 7644).

4.1.1.2 Avoidance and Minimization Efforts

Measure 1: Install Construction Barrier Fencing around the Construction Area to Protect Sensitive Biological Resources to Be Avoided

Caltrans/City or its contractor will install orange construction barrier fencing to identify environmentally sensitive areas. A qualified biologist will identify sensitive biological resources adjacent to the construction area before the final design plans are prepared so that the areas to be fenced can be included in the plans. The area that would generally be required for construction, including staging and access, is shown in Figure 3. Portions of this area that are to be avoided during construction will be fenced off to avoid disturbance. Sensitive biological resources that occur adjacent to the construction area include sensitive natural communities; heritage trees to be retained; special-status wildlife habitats for foothill yellow-legged frog, California red-legged frog, and western pond turtle (creek channel); and nests of migratory birds.

Before construction begins, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the barrier fencing and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans. The fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction.

Measure 2: Conduct Environmental Awareness Training for Construction Employees

Caltrans/City will retain a USFWS-approved biologist to develop and conduct environmental awareness training for construction employees on the importance of onsite biological resources, including sensitive natural communities; trees to be retained; special-status wildlife habitats for foothill yellow-legged frog, California red-legged frog, and western pond turtles (creek channel); and nests of special-status birds. In addition, construction employees will be educated about invasive plant identification and the importance of controlling and preventing the spread of invasive plant infestations.

The environmental awareness program will be provided to all construction personnel to brief them on the life history of special-status species in or adjacent to the project area, the need to avoid impacts on sensitive biological resources, any terms and conditions required by state and federal agencies, and the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the project, the contractor's superintendent will ensure that the personnel receive the mandatory training before starting work. An environmental awareness handout that describes and illustrates sensitive resources to be avoided during project construction and identifies all relevant permit conditions will be provided to each person.

Measure 3: Retain a Biological Monitor to Conduct Weekly Visits during Construction

Caltrans/City will retain a qualified biologist to conduct construction monitoring in and adjacent to all sensitive habitats in the construction area. The frequency of monitoring will range from daily to weekly depending on the biological resource. The monitor, as part of the overall monitoring duties, will inspect the fencing once a week along the creek and riparian vegetation in the construction area, surrounding trees, and special-status wildlife habitats. The biological monitor will assist the construction crew as needed to comply with all project implementation restrictions and guidelines. The biological monitor also will be responsible for ensuring that the contractor maintains the staked and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources.

Measure 4: Avoid and Minimize Potential Disturbance of Riparian Communities

Caltrans/City will avoid and minimize potential disturbance of riparian communities by implementing the following measures.

- The potential for long-term loss of riparian vegetation will be minimized by trimming vegetation, where possible, rather than removing entire shrubs or trees. Shrubs that need to be trimmed will be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary

within the construction zone. To protect nesting birds, Caltrans/City will not allow pruning or removal of woody riparian vegetation between February 1 and September 30 without preconstruction surveys.

- A certified arborist will be retained to perform any necessary pruning or root cutting of retained riparian trees.
- The areas that undergo vegetative pruning and tree removal will be inspected immediately before construction, immediately after construction, and 1 year after construction to determine the amount of existing vegetative cover, cover that has been removed, and cover that resprouts. If, after 1 year, these areas have not resprouted sufficiently to return the cover to the pre-project level, Caltrans/City will replant the areas with the same species (or native species if existing vegetation removed was non-native) to reestablish the cover to the pre-project condition.

4.1.1.3 Project Impacts

Construction would result in a permanent loss of 0.03 acre of riparian forest in the study area (Figure 4). The permanent impact area would include riparian trees, as well as woody understory plants such as young trees and Himalayan blackberry. Approximately 0.04 acre of riparian forest vegetation would be temporarily disturbed during construction (Figure 4). This impact would include the probable removal of additional trees and understory vegetation to provide equipment access to the creek. Impacts on riparian forest vegetation could also occur from adjacent construction activity. Riparian vegetation is adjacent to the construction area and would not be removed for construction, but it could sustain damage from equipment.

State and federal agencies would require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. The loss or disturbance of riparian vegetation is considered adverse because it provides a variety of important ecological functions and values. Implementation of the avoidance and minimization efforts described above and in Section 4.1.2.2 for creek channel would minimize the impacts on riparian forest. Additional mitigation is proposed to compensate for the direct impacts on riparian forest.

4.1.1.4 Compensatory Mitigation

Measure 5: Compensate for Temporary and Permanent Loss of Riparian Vegetation

Caltrans/City will compensate for temporary construction-related loss of riparian vegetation by replanting the temporarily disturbed area with the native species removed, including coast live oak and arroyo willow. Replanting will occur after completion of the construction activities and before October 15 to minimize erosion and creek sedimentation.

Caltrans/City will compensate for the permanent loss of riparian vegetation by restoring the riparian forest adjacent to the permanent impact area along the Arroyo de San Pedro Regaldo at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). This ratio will be confirmed through coordination with state and federal agencies as part of the permitting process for the proposed project.

Caltrans/City will prepare a mitigation planting plan, which will include a species list and number of each species, planting locations, and maintenance requirements. Non-woody riparian species plantings and small trees will consist of cuttings taken from local plants, or plants grown from local material obtained within the Arroyo de San Pedro Regaldo watershed. Replacement of any trees with a circumference of 44 inches or more (equivalent to a diameter of approximately 14 inches or more) measured at 54 inches above the existing grade will be in accordance with the City's heritage tree ordinance, and will include either three 15-gallon trees or one 24-inch box size specimen tree for each heritage tree removed.

Planted species will include coast live oak, arroyo willow, California bay, and Himalayan blackberry. Native understory species, such as sedge species, mugwort, California wild rose, poison-oak, California wild grape, or other suitable species will be planted. Plantings will be monitored annually for 3 years or as required in the project permits.

If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.

4.1.1.5 Cumulative Impacts

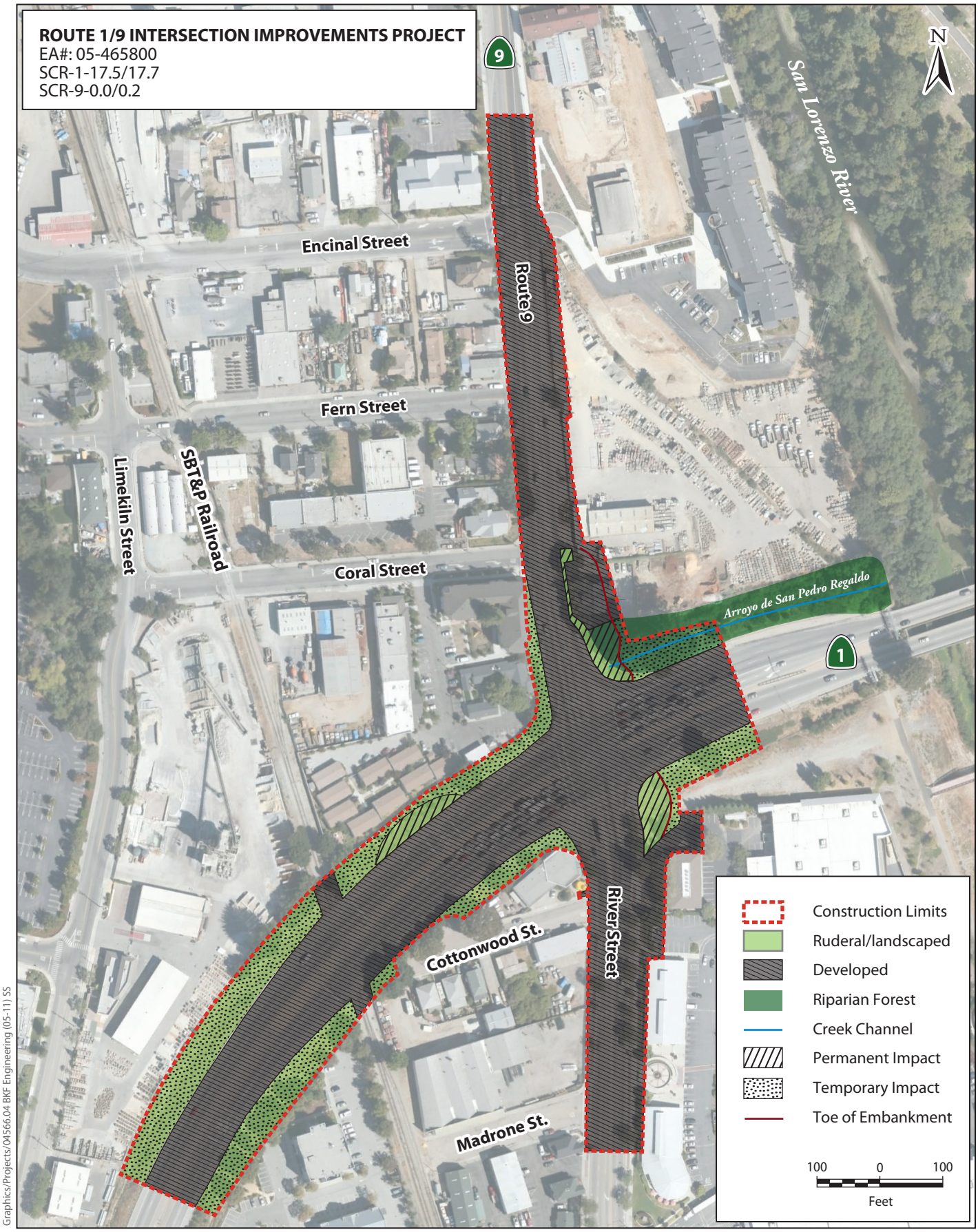
Cumulative impacts on riparian vegetation would result from construction of other general development projects in Santa Cruz County. Construction of the proposed project would add to the cumulative loss of riparian habitats. However, with implementation of the avoidance and minimization efforts and compensation for remaining impacts, the proposed project would not likely result in a cumulatively adverse effect on riparian habitats.

4.1.2 Creek Channel

Creek channel habitat is present in the study area in the Arroyo de San Pedro Regaldo.

4.1.2.1 Survey Results

The Arroyo de San Pedro Regaldo crosses under Route 9 from the west side in a 72-inch reinforced concrete pipe storm drain and surfaces on the east side of the highway. The creek flows easterly for approximately 500 feet and discharges into the San Lorenzo River (Figure 3). The OHWM of the creek ranges from 6 to 12 feet wide and 2 to 3 feet deep, and it contained water at the time of the August 4, 2005 and August 7, 2009 site visits, indicating that it is likely to be perennial.



Graphics/Projects/04566.04 BKF Engineering (05-11) SS

Figure 4
Temporary and Permanent Impacts to Natural Communities

4.1.2.2 Avoidance and Minimization Efforts

Measure 6: Implement Best Management Practices to Control Discharge of Construction-Related Pollutants to Surface Waters

Although the proposed project would entail disturbance of less than 1 acre and does not require that a National Pollutant Discharge Elimination System (NPDES) permit be obtained, Caltrans/City will implement BMPs to maintain water quality. The BMPs will include provisions for preventing, containing, and reporting spills of hazardous materials. BMPs may include, but are not limited to, the following elements.

- To prevent fertilizers used on landscaped areas from contributing nutrients to the impaired San Lorenzo River, contain runoff from landscaped on-site. This containment can be achieved by irrigating at an agronomic rate so as to prevent runoff.
- Develop a hazardous material spill prevention control and countermeasure plan before construction begins that will minimize the potential for and the effects of hazardous or toxic substances spills during construction. The plan will include storage and containment procedures to prevent and respond to spills, and will identify the parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the spill prevention and countermeasure plan. Caltrans/City will review and approve the contractors' toxic materials spill prevention control and countermeasure plan before allowing construction to begin. Caltrans/City will routinely inspect the construction site to verity that BMPs specified in the plan are properly implemented and maintained. Caltrans/City will notify the contractor immediately if there is a noncompliance issue and will require compliance.
- Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.
- Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- Use other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary re-vegetation or other ground cover) to control erosion from disturbed areas as necessary.
- Avoid earth or organic material from being deposited or placed where it may be directly carried into the channel.
- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; heavily chlorinated water.

- Measure baseline turbidity, pH, specific conductance, and temperature s in the channel when flow is present, and sample water from dewatering activities. As required by the RWQCB, avoid exceeding water quality standards specified in the Basin Plan standards over the natural in-situ conditions.

Caltrans/City or its contractors will implement a monitoring program to verify BMP effectiveness. The monitoring program will begin at the outset of construction and terminate upon completion of the project.

4.1.2.3 Project Impacts

Construction of the project would involve extension of the existing culvert in the Arroyo de San Pedro Regaldo, resulting in direct disturbance of jurisdictional creek channel. The existing concrete apron and cutoff wall that extend approximately 25 feet from the existing culvert would remain in place or be reconstructed "in-kind". This would be a permanent loss of 0.01 acre and a temporary loss of 0.01 acre of creek channel within the project area (Figure 4). These impact acreages are based on the OHWM delineation (Appendix C).

Permanent impacts on the creek channel would include construction associated with extension of the culvert on the Arroyo de San Pedro Regaldo, which would be permanent fill. The toe of the embankment would be extended approximately 40 feet beyond the existing roadway, and the existing culvert would be extended approximately 25 feet. The OHWM width of the creek is approximately 20 feet outside of the culvert. The total fill, therefore, would be approximately 0.01 acre.

All in-water construction activities would be conducted during the dry season, but the creek is a perennial waterway and would require some dewatering for construction. Dewatering would be accomplished by using small check dams and bypass pipes, which would be considered temporary impacts. In addition, potential temporary impacts on water quality during construction could result from release of hazardous construction-related materials (e.g., gasoline, oils, grease, lubricants, and other petroleum-based products) into the creek.

The Arroyo de San Pedro Regaldo connects to the San Lorenzo River downstream of the project, and these drainages are considered waters of the United States, subject to regulation under CWA Section 404. Both permanent and temporary placement of material in the creek, including check dams and bypass pipes, would be considered placement of fill within waters of the United States. This activity would require Section 404 authorization from USACE and CWA Section 401 water quality certification from the RWQCB. A SAA from CDFG would be required for construction activity within the creek channel and the riparian habitat.

4.1.2.4 Compensatory Mitigation

Measure 7: Restore Temporarily Disturbed Creek Channel Habitat and Compensate for Permanent Loss of Creek Channel Habitat

Caltrans/City will restore portions of the creek channel temporarily disturbed by construction to original grade and preconstruction conditions following construction.

Caltrans/City will compensate for the permanent fill of other waters of the United States in creek channel habitat at a minimum ratio of 1:1 (1 acre restored or created for every 1 acre permanently affected). The actual compensation ratios will be determined through coordination with the RWQCB and USACE as part of the permitting process. Caltrans/City will compensate for permanent loss of creek channel by implementing one or a combination of the following options.

- Purchase credits for created riparian stream channel at a locally approved mitigation bank. Caltrans/City will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits.
- Compensate out-of-kind for loss of drainages by implementing compensatory mitigation for riparian forest impacts described in Section 4.1.1.4. The acreage restored to compensate for loss of creek channel will be added to the acreage restored for loss of riparian habitat.

4.1.2.5 Cumulative Impacts

Cumulative impacts on creek channel habitat would result from construction of other general development projects in Santa Cruz County. Construction of the proposed project would add to the cumulative loss of creek channel habitats. However, with implementation of the above measures, the proposed project would not likely result in a cumulatively adverse effect on creek channel habitats.

4.2 Sensitive Plant Species

4.2.1.1 Survey Results

No sensitive plants have been previously recorded in or adjacent to the study area (California Natural Diversity Database 2011; California Native Plant Society 2011). Potential habitat for two sensitive plant species (California bottlebrush grass and Loma Prieta hoita) is present in the study area, but the habitat is marginal due to the level of disturbance within the riparian community. Surveys of the study area conducted on August 4, 2005 and May 20, 2011, determined that these species were not present. Therefore, the study area does not support sensitive plant species, and the proposed project would not result in impacts on sensitive plant species.

4.2.1.2 Avoidance and Minimization Efforts

No avoidance and minimization efforts are proposed.

4.2.1.3 Project Impacts

No sensitive plant species were found in the project area, and the project would not result in impacts on sensitive plant species.

4.2.1.4 Compensatory Mitigation

No compensatory mitigation is required for sensitive plant species.

4.2.1.5 Cumulative Impacts

Cumulative impacts on sensitive plant species would result from construction of other general development projects in Santa Cruz County. However, the project would have no impact on sensitive plant species, and would not contribute to cumulative impacts on sensitive plant species.

4.3 Special-Status Wildlife Species

Of the 27 sensitive wildlife species identified as potentially occurring in the project region (Table 3), suitable habitat was identified in or adjacent to the study area for four. These four species are discussed below.

4.3.1 Foothill Yellow-Legged Frog and Western Pond Turtle

Foothill yellow-legged frog (*Rana boylii*) is designated as a state species of special concern. Historically, foothill yellow-legged frogs occurred in the coastal foothills and mountains from the Oregon border south to Los Angeles County and in the Sierra Nevada foothills south to Kern County (Zweifel 1955: 215; Stebbins 2003: 232). The current range excludes coastal areas south of northern San Luis Obispo County and foothill areas south of Fresno County where the species is apparently extirpated (Jennings and Hayes 1994: 67–69). The species can occur from sea level to 6,000 ft (Stebbins 2003:232). Foothill yellow-legged frogs occupy rocky streams in valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types of habitat (Zeiner et al. 1988: 86). The streambed is usually gravelly or sandy and the stream gradient is generally not steep (Zweifel 1955: 221). Foothill yellow-legged frogs are typically found near water, especially near riffles with rocks near and sunny banks (Stebbins 2003: 232). Foothill yellow-legged frogs are active from late February or early March through summer and into the fall (Zweifel 1955: 226). The species breeds from mid-March to May after the high-water stage in streams has passed and less sediment is being conveyed (Stebbins 1954: 130).

Western pond turtle (*Emys marmorata*) occurs throughout much of California except for east of the Sierra-Cascade crest and desert regions (with the exception of the Mojave River and its tributaries) (Zeiner et al. 1988: 100). Aquatic habitats used by western pond turtles include ponds, lakes, marshes, rivers, streams, and irrigation ditches with a muddy or rocky bottom in grassland, woodland, and open forest areas (Stebbins 2003: 250). Western pond turtles spend a

considerable amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris (Jennings et al. 1992: 11). Western pond turtles move to upland areas adjacent to watercourses to deposit eggs and overwinter (Jennings and Hayes 1994: 98). Turtles have been observed overwintering several hundred meters from aquatic habitat. In the southern portion of the range and along the central coast, western pond turtles are active year-round. In the remainder of their range, these turtles typically become active in March and return to overwintering sites by October or November. (Jennings et al. 1992: 11.)

4.3.1.1 Survey Results

Focused surveys for foothill yellow-legged frog and western pond turtle were not conducted. There is one record for multiple occurrences of foothill yellow-legged frog in Soquel Creek approximately 5 miles from the project area. There are two additional records for occurrences 5–10 miles from the study area (California Natural Diversity Database 2011). There are six records for occurrences of western pond turtle within 5 miles of the study area (California Natural Diversity Database 2011). The closest occurrences are approximately 2 miles from the study area. The Arroyo de San Pedro Regaldo provides suitable refuge habitat for foothill yellow-legged frogs and basking, refuge and foraging habitat for western pond turtles. Frogs and turtles are more likely to occur at the east end of the drainage near the San Lorenzo River, where there is less disturbance and noise.

4.3.1.2 Avoidance and Minimization Efforts

To avoid and minimize impacts on foothill yellow-legged frog and western pond turtle, and their habitat, Measures 1–4, 6, (described above) and 8 will be implemented.

Measure 8. Conduct Preconstruction Surveys for Foothill Yellow-Legged Frog and Western Pond Turtle and Monitor In-Creek Work if Found

Within 48 hours of the start of work within or along the Arroyo de San Pedro Regaldo, a qualified biologist will conduct a preconstruction survey for foothill yellow-legged frogs and western pond turtle in the construction area and 500 feet upstream and downstream of the construction area. If the biologist discovers any frogs, tadpoles, or egg masses or western pond turtles in or near the construction area, a biological monitor will be contracted to monitor activities within the Arroyo de San Pedro Regaldo to ensure that no foothill yellow-legged frogs or western pond turtles are harmed during construction activities in and adjacent to the creek. If any foothill yellow-legged frogs or western pond turtles are found during monitoring, a biologist with an MOU from CDFG that authorizes relocation of foothill yellow-legged frogs and western pond turtles will relocate frogs and/or turtles outside of the construction area.

4.3.1.3 Project Impacts

Movement of construction equipment on the creek banks and placement of fill in the channel could result in the injury or mortality of foothill-yellow-legged frogs and western pond turtles. In-water construction activities would occur during the dry season (July 1 through October 15); since the creek appears to be perennial, water may still be present. Construction activities along

the creek banks that do not involve in-water work would be restricted to May 1 through October 15.

This project specification would minimize impacts on foothill yellow-legged frog and western pond turtle. Although accidental spills could still occur, contamination of aquatic habitat from vehicle refueling and operation of vehicles and equipment adjacent to the Arroyo de San Pedro Regaldo and subsequent injury or death of foothill yellow-legged frogs and western pond turtles would be minimized through implementation of Measure 6. Construction of the earthen embankment and extension of the existing culvert within the creek channel would result in the permanent loss of 0.01 acre of creek channel and 0.03 acre of riparian forest that provides suitable habitat for foothill yellow-legged frog and western pond turtle (Figure 4). There would also be a temporary loss of 0.01 acre of creek channel and 0.04 acre of riparian forest habitats. Removal and temporary loss of these small amounts of habitat would not substantially affect foothill yellow-legged frog or western pond turtle.

4.3.1.4 Compensatory Mitigation

The temporary and permanent loss of small amounts of creek channel and riparian forest habitats would not substantially affect foothill yellow-legged frog or western pond turtle; therefore, compensatory mitigation for the loss of small amounts of these habitats is not recommended. The loss of riparian forest and creek channel would be mitigated for through implementation of Measures 5 and 7.

4.3.1.5 Cumulative Impacts

Because the proposed project could result in injury or mortality of individuals, and would result in the removal of a small amount of suitable aquatic habitat for foothill yellow-legged frog and western pond turtle, it would contribute to other impacts on these species in the project vicinity. However, with implementation of avoidance and minimization measures, and compensation for the loss of riparian forest and creek channel (Measures 5 and 7), the proposed project would not result in a cumulatively adverse effect on these species or their habitat.

4.3.2 California Red-Legged Frog

California red-legged frog is federally listed as threatened and is a California species of special concern. The species occurs at isolated locations in the Sierra Nevada, North Coast, and northern Transverse Ranges. It is relatively common in the San Francisco Bay area and along the central coast (*69 FR 19622*) and is believed to be extirpated from the floor of the Central Valley (U. S. Fish and Wildlife Service 2002: 5). California red-legged frogs use a variety of habitat types; these include various aquatic systems as well as riparian and upland habitats (U. S. Fish and Wildlife Service 2002: 12). However, they may complete their entire life cycle in a pond or other aquatic site that is suitable for all life stages (*66 FR 14626*). California red-legged frogs inhabit marshes; streams; lakes; ponds; and other, usually permanent, sources of water that have dense riparian vegetation (Stebbins 2003: 225). Habitat consists of deep (at least 2.5 ft deep) still or slow-moving water with shrubby riparian vegetation (willows [*Salix* sp.]) and/or tules [*Scirpus* sp.] and cattails [*Typha* sp.]) (Jennings and Hayes 1994: 64). Although red-legged frogs can

inhabit either ephemeral or permanent streams or ponds, populations probably cannot be maintained in ephemeral streams in which all surface water disappears (Jennings and Hayes 1994: 64–65). California red-legged frogs typically remain near streams or ponds; however, marked and radio-tagged frogs have been observed to move more than 2 miles through upland habitat. These movements are typically made during wet weather and at night (U. S. Fish and Wildlife Service 2002: 12–13.) California red-legged frogs breed from November through April and typically lay their eggs in clusters around aquatic vegetation (U. S. Fish and Wildlife Service 2002: 16). Larvae undergo metamorphosis between July and September, 3.5–7 months after hatching (*66 FR 14626*).

4.3.2.1 Survey Results

A site assessment for California red-legged frog was conducted on August 4, 2005 and November 18, 2010. The site assessments were conducted in the study area and within 1-mile of the study area, and were conducted in accordance with USFWS guidelines (U.S. Fish and Wildlife Service 2005a). Surveys according to USFWS guidelines have not been conducted. The Arroyo de San Pedro Regaldo provides small areas of breeding habitat (pools) at the west and east ends of the study area. The remainder of the creek provides suitable refuge habitat. The upland is limited to the riparian corridor along the Arroyo de San Pedro Regaldo and the San Lorenzo River. There are 16 records of California red-legged frog occurrences within a 5-mile radius of the project area (California Natural Diversity Database 2011). The closest recorded sightings of California red-legged frogs are approximately 1.25 miles west of the project area, in Moore Creek (California Natural Diversity Database 2011). This occurrence is not hydrologically connected to the Arroyo de San Pedro Regaldo in the project area or the San Lorenzo River.

4.3.2.2 Avoidance and Minimization Efforts

To avoid and minimize impacts on California red-legged frog and its habitat, Measures 1–4 and 6 (described above) will be implemented. In addition, Measure 9 will be implemented to further minimize adverse effects on California red-legged frog.

Measure 9: Implement Measures from the Programmatic Biological Opinion to Avoid and Minimize Potential Impacts on California Red-Legged Frogs and their Habitat

To ensure that the proposed project is conducted in accordance with the Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program (Programmatic BO) (U.S. Fish and Wildlife Service 2011b), Caltrans/City will implement the avoidance and minimization measures from the Programmatic BO prior to and during construction at the Arroyo de San Pedro Regaldo. The measures are summarized below. The full text from the Programmatic BO should be reviewed prior to construction.

- Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs.
- Ground disturbance will not begin until written approval is received from the USFWS that the biologist is qualified to conduct the work, unless the individual has been approved previously and USFWS has not revoked that approval.

- A USFWS-approved biologist will survey the project site 48 hours before the onset of work activities. If any life stage of California red-legged frog is found, the approved biologist will relocate the California red-legged frog the shortest distance possible to a location that will not be affected by project activities.
- Before any activities begin, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the specific measures that are being implemented, and the boundaries within which the project may be accomplished.
- A USFWS-approved biologist will be present at the work site until all California red-legged frogs have been removed, workers have been instructed, and disturbance of habitat has been completed. After this time, Caltrans/City will designate a person to monitor compliance with all minimization measures. If the monitor or USFWS-approved biologist recommends that work be stopped, they will notify the resident engineer, who will eliminate the effect or halt actions causing the effect. If work is stopped, USFWS will be notified as soon as possible.
- During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.
- All refueling, maintenance, and staging of equipment and vehicles will occur at least 60 feet from riparian habitat and water bodies, and in a location where a spill would not drain directly toward aquatic habitat. The monitor will ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the contractor will ensure that a plan is in place for prompt and effective response to accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take will a spill occur.
- Habitat contours will be returned to their original configuration at the end of project activities, unless determined to be infeasible by the USFWS and Caltrans.
- The number of access routes, size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project. Environmentally sensitive areas will be established to confine access routes and construction areas.
- Work will be scheduled during the time of the year when impacts to California red-legged frog will be minimal. In-water construction activities would occur during the dry season (July 1 through October 15), and construction activities along the creek banks that do not involve in-water work would be restricted to May 1 through October 15.
- Best management practices outlined in any authorizations or permits will be implemented to control sedimentation during and after project implementation.
- If a work site is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh not larger than 0.2 inch to prevent California red-legged frogs from entering the pump system. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction.
- Unless approved by USFWS, water will not be impounded in a manner that may attract California red-legged frogs.

- A USFWS-approved biologist will permanently remove any individuals of exotic species such as bullfrogs, crayfish, and centrarchid fishes from the project area to the maximum extent possible. The biologist will be responsible for ensuring his or her activities are in compliance with the California Fish and Game Code.
- If Caltrans demonstrates that disturbed areas have been restored to conditions that allow them to function as habitat for the California red-legged frog, these areas will not be included in the amount of total habitat permanently disturbed.
- To ensure that diseases are not conveyed between work sites by the USFWS-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force will be followed at all times.
- Project sites will be revegetated with an assemblage of native riparian, wetland, and upland vegetation suitable for the area.
- Caltrans will not use herbicides as the primary method used to control invasive, exotic plants.
- Upon completion of the project, the USFWS project completion form (included in the Programmatic BO) will be completed and send to the Ventura Fish and Wildlife Office.

4.3.2.3 Project Impacts

Movement of construction equipment on the creek banks and placement of fill in the channel could result in the injury or mortality of California red-legged frogs. In-water construction activities would occur during the dry season (July 1 through October 15); since the creek appears to be perennial, water may still be present. Construction activities along the creek banks that do not involve in-water work would be restricted to May 1 through October 15. These project specifications would minimize impacts on California red-legged frog. Although accidental spills could still occur, contamination of aquatic habitat from vehicle refueling and operation of vehicles and equipment adjacent to the Arroyo de San Pedro Regaldo and subsequent injury or death of California red-legged frog would be minimized through implementation of Measure 6. Construction of the earthen embankment and extension of the existing culvert within the creek channel would result in the permanent loss of 0.01 acre of creek channel and 0.03 acre of riparian forest that provides suitable habitat for California red-legged frog (Figure 4). There would also be a temporary loss of 0.01 acre of creek channel and 0.04 acre of riparian forest habitats. Removal and temporary loss of these small amounts of aquatic and riparian habitat would not substantially affect California red-legged frog.

4.3.2.4 Compensatory Mitigation

The temporary and permanent loss of small amounts of creek channel and riparian forest habitats would not substantially affect California red-legged frog; therefore, compensatory mitigation for the loss of small amounts of these habitats is not recommended. The loss of riparian forest and creek channel would be mitigated for through implementation of Measures 5 and 7.

4.3.2.5 Cumulative Impacts

Because the proposed project could result in injury or mortality of individuals, and would result in the removal of a small amount of suitable aquatic habitat for California red-legged frog, it would contribute to other impacts on this species in the project vicinity. However, with project specifications described above, implementation of avoidance and minimization measures, and compensation for the loss of riparian forest and creek channel (Measures 5 and 7), the proposed project would not result in a cumulatively adverse effect on California red-legged frog or its habitat.

4.3.3 White-Tailed Kite and Other Migratory Birds

White-tailed kite (*Elanus leucurus*) is fully protected under the CFGC. White-tailed kite occurs in coastal and valley lowlands in California (Zeiner et al. 1990a:120). White-tailed kites generally inhabit low-elevation grassland, savannah, oak woodland, wetland, agricultural, and riparian habitats. Some large shrubs or trees are required for nesting and for communal roosting sites. Vegetation structure and prey populations appear to be more important than plant associations in determining suitability. Nest trees range from small, isolated shrubs and trees to trees in relatively large stands (Dunk 1995:6, 8). White-tailed kites make nests of loosely piled sticks and twigs, lined with grass and straw, near the top of dense oaks, willows, and other tree stands. The breeding season lasts from February to October and peaks between May and August. They forage in undisturbed, open grassland, meadows, farmland, and emergent wetlands (Zeiner et al. 1990a:120.).

Several non-special-status migratory birds, including Anna's hummingbird (*Calypte anna*), scrub jay (*Aphelocoma coerulescens*), American robin (*Turdus migratorius*), and song sparrow (*Melospiza melodia*) could nest on the ground or in shrubs or trees in and adjacent to the project area. These generally common species are locally and regionally abundant. The breeding season for most birds is generally from February 1 to September 30. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and CFCG Sections 3503 and 3503.5. USFWS is responsible for overseeing compliance with the MBTA and CDFG is responsible for overseeing compliance with the CFGC and make recommendations on nesting bird and raptor protection.

4.3.3.1 Survey Results

Focused surveys for white-tailed kite nests were not conducted. There is one record for an occurrence of nesting white-tailed kites approximately 2 miles from the study area (California Natural Diversity Database 2011). The riparian forest in and adjacent to the study area provides suitable nest trees for white-tailed kite. They are more likely to likely to occur at the east end of the drainage near the San Lorenzo River, where there is less disturbance and noise.

The riparian forest and ruderal/landscaped areas in and adjacent to the study area provide suitable nesting habitat for migratory birds. No nests were noticed in or adjacent to the study area during field surveys, but a focused nest survey was not conducted.

4.3.3.2 Avoidance and Minimization Efforts

To avoid and minimize impacts on white-tailed kite and other migratory birds, and their habitat, Measures 1–4 (described above) and 10 will be implemented.

Measure 10: Begin Work Prior to the Nesting Season or Conduct Preconstruction Surveys for Nesting Migratory Birds

Vegetation removal will occur during the non-breeding season for most migratory birds (generally between October 1 and January 31) to the extent feasible.

If possible, construction activities will begin prior to the nesting season for most birds (generally, February 1 through September 30). Beginning construction prior to the breeding season will establish a level of noise disturbance that will dissuade noise-sensitive raptors and other birds from attempting to nest within or near the study area.

If beginning construction activities (including vegetation removal) prior to the breeding season is not possible, Caltrans/City will retain a qualified wildlife biologist with knowledge of the relevant species to conduct nesting surveys before the start of construction. A minimum of three separate surveys will be conducted for migratory birds, including raptors. Surveys will include a search of all trees and shrubs that provide suitable nesting habitat in the project area. In addition, a 500 foot area around the project area will be surveyed for nesting raptors. Surveys should occur during the height of the breeding season (March 1 to June 1) with one survey occurring in each of two consecutive months within this peak period and the final survey occurring within 1 week of the start of construction. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established around the site to avoid disturbance or destruction of the nest site until the end of the breeding season (September 30) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the project area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with USFWS and CDFG and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.

4.3.3.3 Project Impacts

Construction activities may occur during the nesting season of white-tailed kite and other migratory birds (February 1 through September 30) and could result in the disturbance of nesting birds. Removal of nests or construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. In addition, approximately 0.03 acre of riparian forest would be removed as a result of construction of the project (Figure 4). The implementation of Measures 1–4 and 10 would ensure that impacts on nesting white-tailed kites and other migratory birds would be avoided or reduced.

4.3.3.4 Compensatory Mitigation

The permanent loss of 0.03 acre of riparian forest would be compensated through implementation of Measure 5. With the implementation of avoidance and minimization measures discussed above, no additional compensatory mitigation would be required.

4.3.3.5 Cumulative Impacts

Because measures will be implemented to avoid and minimize potential impacts on white-tailed kite and other migratory birds, and compensate for loss of riparian forest, it would not contribute to cumulative effects on white-tailed kite and other migratory birds.

4.4 Special-Status Fish

Three sensitive fish species (steelhead, coho salmon, and tidewater goby) were identified as potentially occurring in the vicinity of the study area (San Lorenzo River). These species are discussed below.

4.4.1 Steelhead Trout

CCC steelhead (*Oncorhynchus mykiss*) distinct population segment (DPS) was listed as threatened by the National Marine Fisheries Service (NMFS) on August 18, 1997 (62 FR 43938). On January 5, 2006, NMFS issued a final listing determination reaffirming the threatened status of CCC steelhead (71 FR 834). CCC steelhead includes populations in coastal California streams from the Russian River to Aptos Creek, and several tributaries of San Francisco, San Pablo, and Suisun Bays. NMFS issued a final rule designating critical habitat for CCC steelhead on September 2, 2005 (70 FR 52488). Critical habitat includes the San Lorenzo River within the study area.

Steelhead trout are the anadromous form of *Oncorhynchus mykiss* (with rainbow trout being the non anadromous form). Steelhead spend one to two years in the ocean before returning to their natal streams. In central California streams, migration to spawning areas typically begins in December and can last into May depending on the frequency and magnitude of storms needed to provide suitable flows for upstream migration. Unlike other salmonids, steelhead are capable of spawning more than once before dying (Shapovalov and Taft 1954; Moyle 2002). Steelhead spawning in the San Lorenzo River system typically begins in December and continues into April, with a peak between late December and March (Trihey & Associates 1997). Upstream migration occurs slightly later during dry years. Steelhead spawn in similar habitat as coho salmon, except that gravels steelhead use for spawning can be smaller on average (Moyle 2002).

Juvenile CCC steelhead typically spend 1 to 2 years in freshwater before migrating downstream to the ocean. Juveniles require year-round flows, suitable water temperatures, cover, and abundant food (aquatic insects and other invertebrates) to support growth and survival to the smolt stage. Summer rearing habitat consisting of pools, cool water, and sufficient cover is often

cited as a major limiting factor for juvenile steelhead in California streams (Moyle 2002). The primary outmigration of steelhead smolts occurs from March through May.

The Central Coast Evolutionarily Significant Unit (ESU) steelhead population has been historically estimated at 94,000, but has declined to less than 9,000 as of 2003 (Busby et al. 1996). Steelhead runs in the San Lorenzo River have declined proportionately. In, 1965 the CDFG estimated the steelhead spawning run to be roughly 23,000 fish (Titus et al. 1994). In 1977, a drought year, 1,614 adults were trapped at the Felton Diversion Dam. In 1978, an estimated 3000 steelhead returned, followed by 625 in 1979 and 496 in 1980 (Kelley and Dettman 1981). Estimates of the number of juvenile steelhead in the mainstem San Lorenzo between Route 1 and Waterman Gap in the fall of 1981 and 1994–2001 ranged from approximately 35,000 in 2001 to 88,000 in 1997 (Alley et al. 2004)

Based on a review of existing habitat and population data, Alley et al. (2004) concluded that sedimentation due to excessive erosion of fine sediment from the watershed, low summer streamflows (especially in drought years), and adult passage impediments were major limiting factors for salmonid production in the San Lorenzo River. High water temperature was also identified as a limiting factor in the lower San Lorenzo River. The primary limiting factor for smolts moving downstream from rearing habitat to the ocean is dewatering of the stream channel resulting in very shallow riffles or dry sections, which create physical barriers to migration. Upstream diversions exacerbate these conditions, especially in drought years.

4.4.1.1 Survey Results

The San Lorenzo River in the study area is a migration corridor for adult and juvenile steelhead between November and June. Within the study area, the abundance of sand and high winter flows create poor spawning conditions. Juvenile steelhead use the lagoon and lower river for summer rearing although the quality of the habitat is low, especially in drought years. In the main channel, sand limits the extent and depth of pools and the abundance of aquatic insects, reducing the value of this area for summer rearing of steelhead (John Gilchrist & Associates 2003). Fish sampling in fall 2000 detected relatively low densities of juvenile steelhead (4.5 fish per 100 feet of stream) between the Route 1 bridge and the Water Street bridge (John Gilchrist & Associates 2003).

4.4.1.2 Avoidance and Minimization Efforts

The following measures will be implemented to avoid or minimize impacts on CCC steelhead and critical habitat. Measures 4–7, described previously, would also contribute to minimization and avoidance of impacts to CCC steelhead and critical habitat.

Measure 11: Conduct All In-Water Construction Activities during the Dry Season

Caltrans/City proposes to conduct in-water construction activities during the dry season (July 1–October 15) to avoid the primary migration seasons of adult and juvenile salmonids and minimize the potential for adverse effects on water quality and aquatic habitat in the San Lorenzo River resulting from temporary increases in suspended sediment and turbidity.

Measure 12: Bypass the Flow and Isolate the In-Channel Construction Area

Caltrans/City will require the contractor to bypass the flow of the creek around the construction area and isolate the construction area from the live stream to minimize downstream water quality effects during construction. A pump and/or gravity will be used to bypass the flow through a pipe (large enough to accommodate the entire flow of the creek) to a point downstream of the construction area. Temporary cofferdams will be constructed as needed to isolate the construction area from the live stream, and will be constructed of clean imported gravel, impermeable liners (e.g., plastic), water bladders, and/or sand bags.

Measure 13: Dewater the Construction Site

During dewatering operations, water will be pumped out of the isolated construction area to water storage containers or a temporary detention or filtration basin away from the stream channel to prevent direct discharge of this water to the creek. All gravel, sand bags, liners, pipes, concrete debris, and other materials will be removed from the channel before stream flow is restored to the dewatered area.

4.4.1.3 Project Impacts

Project impacts to steelhead and designated critical habitat include temporary increases in turbidity and sedimentation and potential discharges of contaminants into the San Lorenzo River. Implementation of Measures 6, 11, 12, and 13 would avoid or minimize potential water quality impacts to steelhead and critical habitat in the San Lorenzo River.

Construction activities would result in small temporary and permanent losses of riparian vegetation and aquatic habitat in the Arroyo de San Pedro Regaldo. Riparian vegetation bordering the channel of the Arroyo de San Pedro Regaldo contributes to aquatic habitat values in the San Lorenzo River by providing shade (reducing the amount of solar heating of the stream), stabilizing the channel and bank (reducing erosion and sediment inputs), and providing inputs of woody material, nutrients, and food for fish (e.g., aquatic insects). Caltrans/City will avoid, minimize, and compensate for impacts to riparian vegetation and aquatic habitat by implementing Measures 4, 5, and 7.

4.4.1.4 Compensatory Mitigation

Caltrans/City will compensate for temporary and permanent losses of riparian vegetation and aquatic habitat by implementing Measures 5 and 7.

4.4.1.5 Cumulative Impacts

With implementation of the above avoidance, minimization, and compensation measures, the proposed project would not likely result in cumulative adverse effects on steelhead or its designated critical habitat.

4.4.2 Coho Salmon

The Central California Coast (CCC) coho salmon (*O. kisutch*) ESU was formerly listed as threatened by NMFS on October 31, 1996, and was listed as endangered on June 28, 2005 (70FR37160). CCC coho salmon also are listed as endangered under the California Endangered Species Act (CESA). The CCC coho salmon ESU includes populations from Punta Gorda in Humboldt County to and including the San Lorenzo River in Santa Cruz County, as well as populations in tributaries to San Francisco Bay (excluding the Sacramento-San Joaquin River system). Critical habitat for coho salmon was designated by NMFS on May 5, 1999 (64 FR 24049) and includes the San Lorenzo River within the study area.

Coho salmon is an anadromous fish species which spends the initial 12–18 months of the species life in freshwater and up to two years in the ocean, returning to spawn in its natal stream in the third year (Shapovalov and Taft 1954). Because this 3-year cycle is fairly rigid, spawning runs with relatively poor reproductive success can result in poor spawning runs three years later. The upstream migration of adult coho in the San Lorenzo River system usually occurs in November and December, with peak times of entry in December. However, migration timing is dependent on flow timing and therefore may vary according to the timing of fall and winter rainfall (U.S. Fish and Wildlife Service 1994).

Coho salmon usually spawn at the heads of riffles, just below a pool, with gravel substrate (Moyle 2002). Following spawning, adult coho die. Juvenile coho typically emerge from spawning redds in spring and rear in the natal watershed for one year before outmigrating to the ocean (Shapovalov and Taft 1954). Juveniles often occupy habitat at the heads of pools that, in general, provide the optimum combination of food availability and refuge with a minimum amount of energy expenditure. Juvenile coho depend upon cool water and abundant invertebrate prey in order to rear successfully. Warmer water temperatures require more abundant food sources for survival due to the resultant increase in the fish's metabolic rate. In late summer, coho often move into deeper pools with overhanging vegetation and woody debris (Bryant 1994). Seaward migration of juvenile coho salmon usually occurs between April and late May in the San Lorenzo River (Trihey & Associates 1997).

Coho salmon populations in California have declined to less than one-third of their population levels in 1965 (Bryant 1994). Most of the natural production of coho salmon in streams to the south of San Francisco Bay is extirpated. Of the 13 streams known to have supported coho salmon into the 1970s, only four streams presently have returning runs. Since the 1976-1977 drought, the only known naturally spawning coho populations occur in San Vicente, Gazos, Waddell, and Scott Creeks (Circuit Rider Productions, Inc. and NOAA Coastal Services Center 2004).

In the San Lorenzo River, available records from the Felton Diversion Dam in the late 1970's show that 174 coho adults were trapped in 1976–1977, and 77 adults were caught in 1979–1980. In fall 1981, juvenile coho were found at only Bean and Fall Creek sites out of 32 sites sampled in the San Lorenzo River watershed (Smith 1982). Conditions in the San Lorenzo watershed that hinder the recovery of coho salmon include difficult adult passage conditions in the upper watershed, excessive sedimentation of spawning habitat, removal of woody material from the

stream, water diversions, and warm water temperatures in the lower gradient reaches that coho prefer (Alley et al. 2004).

4.4.2.1 Survey Results

No coho have been captured in recent years, 1994–2002 (Alley 1995–2002; H.T. Harvey 2003). Coho salmon are thought to have been extirpated from the San Lorenzo River as a result of habitat loss and severe drought conditions in 1987–1992.

4.4.2.2 Avoidance and Minimization Efforts

Because of general similarities in life history and habitat requirements to that of steelhead, the minimization, avoidance, and compensation measures described above for CCC steelhead would also apply to CCC coho salmon and designated critical habitat. These measures would also address potential effects on EFH for Pacific salmon.

4.4.2.3 Project Impacts

Project impacts on the CCC coho salmon and critical habitat would be similar to those described for steelhead. Project impacts to critical habitat would also apply to EFH for Pacific salmon.

4.4.2.4 Compensatory Mitigation

With implementation of Measures 5 and 7, no additional compensation measures are required.

4.4.2.5 Cumulative Impacts

With implementation of the avoidance, minimization, and compensation measures identified above, the proposed project would not likely result in cumulative adverse effects on coho salmon, designated critical habitat, or EFH.

4.4.3 Tidewater Goby

The tidewater goby was listed as endangered throughout its range on March 7, 1994 (59 FR 5494 5499). The USFWS designated critical habitat for tidewater goby on November 20, 2000, and revised the critical habitat designation on January 31, 2008 (73 FR 5920). The San Lorenzo River is not designated as critical habitat for tidewater goby but is part of Recovery Sub-Unit GB8 in the Recovery Plan for the Tidewater Goby (USFWS 2005b).

The following is a brief summary of relevant life history information obtained from several sources (Moyle 2002; U.S. Fish and Wildlife Service 2005b, 2007; 73 FR 5920). The tidewater goby, a species endemic to California, occurs in coastal lagoons, estuaries, and marshes at the mouths of major stream drainages. Important habitats include stable lagoons formed by sandbars at the stream mouths during the later spring, summer, and fall. Tidewater gobies prefer waters with relatively low salinity (less than 12 parts per thousand [ppt]) but they have wide salinity tolerances (0–42 ppt), enabling them to occupy freshwater streams and withstand some exposure

to marine waters. Optimal habitats are brackish, shallow-water areas (<2 meters deep) with sandy bottoms and emergent vegetation. Tidewater gobies prefer slack water or low-velocity areas (but not stagnant), avoiding areas with steep gradients or substantial currents. Vegetation provides important cover from predators and shelter during flood events. Backwater marshes, including lateral sloughs, also provide important refuges that reduce the likelihood that tidewater gobies will be flushed out of the lagoons or estuaries during high winter flows.

Tidewater gobies occur primarily in low-gradient sections of freshwater streams upstream or tributary to brackish water habitats. Existing records indicate that tidewater gobies can occur 1.6 to 7.3 miles upstream from the ocean. Sub-adult and adult gobies appear to move upstream in summer and fall, and there is evidence of spawning in these upstream areas. Variation in the extent of these upstream movements may be related to salinity but high stream gradient and other physical barriers (e.g., beaver dams, sills) may be more important in limiting upstream dispersal.

The available tidewater goby habitat in the San Lorenzo River encompasses 26.7 hectares (66 acres) of the lower river (USFWS 2005). In May 2004, Camm Swift and Gary Kittleson observed tidewater goby at this locality for the first time during seining efforts associated with the U.S. Army Corps of Engineers Riverbend Project (Gary Kittleson, personal communication; USFWS 2005). The project area extended from the Laurel Street Bridge (located approximately 1 mile downstream of the Arroyo de San Pedro Regaldo) to the Third Street train trestle bridge (located at the mouth of the San Lorenzo River) (City of Santa Cruz Urban River Plan Task Force 2003). The population was believed to have been locally extirpated but since 2004 has persisted in low numbers (Gary Kittleson, personal communication).

Mr. Kittleson has consistently found tidewater gobies while seining or dip netting for various city projects over the years, but has never found any evidence of gobies above the Water Street Bridge, approximately 0.5 mile downstream of the mouth of the Arroyo de San Pedro Regaldo. Jeff Hagar, a fisheries biologist who often consults with the Department of Water for the City of Santa Cruz, has, over the years, routinely sampled the San Lorenzo River reach that includes the Arroyo de San Pedro Regaldo outlet. This reach of the San Lorenzo River extends from the City of Santa Cruz's water intake, located approximately 0.5 miles upstream of the Arroyo de San Pedro Regaldo, to the Water Street Bridge. Mr. Hagar has not found tidewater goby during his surveys of this upstream reach (Gary Kittleson, personal communication). In 2005, the USFWS concluded that tidewater gobies were not likely to occur in the San Lorenzo River at the site of the proposed bike/pedestrian bridge (located approximately 350 feet downstream of the Arroyo de San Pedro Regaldo outlet) based on surveys conducted by Mr. Hagar and the presence of unsuitable habitat conditions (swift water currents and substrate dominated by gravel) (Pereksta, personal communication).

Tidewater goby populations in the San Lorenzo River are currently characterized as intermittent and dependent on recolonization from adjacent source populations (Corcoran Lagoon, located approximately 1 mile east of the San Lorenzo River). Known or potential threats to this population include municipal runoff, stream channelization, water diversions and groundwater pumping, and native predators. Major constraints to the establishment and persistence of tidewater goby populations in the San Lorenzo River are channelization of the lagoon and lower river, with little refuge from high flows, and frequent breaching of the sandbar in summer.

4.4.3.1 Survey Results

On June 1, 2011, fisheries biologists Rebecca Sloan and Donna Maniscalco (ICF) and Gary Kittleson (Kittleson Environmental Consulting, consulting biologist for the City of Santa Cruz) conducted a field survey of the Arroyo de San Pedro Regaldo and the San Lorenzo River downstream to the Water Street Bridge to evaluate the potential for tidewater goby to occur in the study area. Based on site conditions and a review of past survey results and current information on the life history, distribution, and ecology of tidewater gobies, it was concluded that tidewater gobies are unlikely to occur in the Arroyo de San Pedro Regaldo and San Lorenzo River in the vicinity of the Arroyo de San Pedro Regaldo (ICF International 2011). Although the Arroyo de San Pedro Regaldo could provide winter refuge habitat for tidewater gobies, several factors were identified that would likely preclude their occurrence in the study area. The most significant factor is the presence of a major riffle in the San Lorenzo River approximately 0.5 mile downstream of the Arroyo de San Pedro Regaldo outlet (just downstream of the Water Street Bridge). This is supported by the failure to detect tidewater gobies upstream of the Water Street Bridge during past fish sampling efforts.

4.4.3.2 Avoidance and Minimization Efforts

Implementation of Measures 4–7 and 11–13 would avoid or minimize potential water quality impacts to tidewater gobies and their habitat.

4.4.3.3 Project Impacts

Because tidewater goby are likely restricted to the San Lorenzo River and lagoon downstream of the Water Street Bridge, project effects on this species would be limited to potential water quality effects resulting from temporary increases in turbidity and sedimentation and potential discharges of contaminants into the San Lorenzo River during construction. Caltrans/City will avoid or minimize potential impacts to water quality in the San Lorenzo River by implementing Measures 4–7 and 11–13.

4.4.3.4 Compensatory Mitigation

With implementation of Measures 5 and 7, no additional compensation measures are required.

4.4.3.5 Cumulative Impacts

With implementation of the avoidance, minimization, and compensation measures identified above, the proposed project would not likely result in cumulative adverse effects to tidewater gobies or their habitat.

4.5 Other Biological Issues

4.5.1 Heritage Trees

Heritage trees in the City of Santa Cruz include all species of trees with a circumference of 44 inches or more (equivalent to a diameter of approximately 14 inches or more) measured at 54 inches above the existing grade.

4.5.1.1 Survey Results

A coast redwood (*Sequoia sempervirens*) with a diameter at breast height (dbh) greater than 14 inches is located directly on the border between City of Santa Cruz property and private property near the Route 9/Fern Street intersection. Other roadside trees and several eucalyptus trees within the riparian forest in the study area meet the heritage tree size criterion. Approximately 25 trees in the study area meet the heritage tree size criterion.

4.5.1.2 Avoidance and Minimization Efforts

Implementation of avoidance and minimization efforts described in Section 4.1.1.12 for riparian forest would ensure that construction activities would avoid impacts on heritage trees in the area adjacent to construction.

4.5.1.3 Project Impacts

Construction of the project could affect as many as 25 trees that meet the criterion for a heritage tree under the City of Santa Cruz's Heritage Tree Ordinance. The exact number of trees to be removed or trimmed will be determined during final project design.

Removal of heritage trees would be subject to the permit and mitigation requirements of the City. Impacts on heritage trees that occur in riparian forest are addressed in the impact in Section 4.1.1.3, Riparian Forest. Implementation of the avoidance and minimization measures and compensation for temporary and permanent loss of riparian vegetation, as described in Section 4.1.1.2 and Section 4.1.1.4, would mitigate impacts on heritage trees in those habitats.

4.5.1.4 Compensatory Mitigation

Measure 14: Comply with City of Santa Cruz's Heritage Tree Ordinance

Removal of the heritage-size trees in the construction area would be subject to the permit and mitigation requirements of the City, which includes one of the following two options for each heritage tree removed.

- Three (3) fifteen (15) gallon trees or one (1) twenty-four inch (24") box size specimen tree must be replanted for each heritage tree removed. A $250 bond must be placed with the permit application, which will be returned when the replacement trees are planted and certified by the city arborist; or

- Monetary contribution of $150 for each heritage tree removed to the Santa Cruz Tree Trust Fund.

4.5.1.5 Cumulative Impacts

Cumulative impacts on heritage trees would result from construction of general development projects in Santa Cruz County. Construction of the project would add to the cumulative loss of heritage trees. However, with implementation of the avoidance and minimization efforts and compensation for remaining impacts, the proposed project would not result in a cumulatively adverse effect on heritage trees.

4.5.2 Invasive Plant Species

Invasive plants include species designated as federal noxious weeds by the U.S. Department of Agriculture, species listed by the California Department of Food and Agriculture, and other invasive plants identified by California Invasive Plant Council (CalIPC). Roads, highways, and related construction projects are some of the principal dispersal vectors for invasive plants.

4.5.2.1 Survey Results

Invasive plant species were observed in the understory of the riparian forest, and in the ruderal area (Table 4).

4.5.2.2 Avoidance and Minimization Efforts

Implementation of avoidance and minimization effort Measure 2 in Section 4.1.1.2 for riparian forest (Conduct Environmental Awareness Training for Construction Employees), and the following measure would avoid and minimize the introduction and spread of invasive plants during construction.

Measure 15: Avoid the Introduction and Spread of Invasive Plants

Caltrans's contractor will be responsible for avoiding the introduction of new invasive plants and the spread of invasive plants previously documented in the study area. Accordingly, the following measures will be implemented during construction.

- Surface disturbance within the construction work area will be minimized to the greatest extent possible.
- All disturbed areas will be seeded with certified weed-free native mixes and mulched with certified weed-free mulch (rice straw may be used in upland areas).
- Native, noninvasive species will be used in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.

4.5.2.3 Project Impacts

Invasive plant species in the study area are present along roadsides and in the riparian forest. The roadsides are routinely disturbed by shoulder maintenance and vegetation management activities, and the forest has on-going disturbance due to pedestrian traffic and leaving of trash. The proposed project would create additional disturbed area for a temporary period, but it would not substantially increase the area subject to repeated disturbance because the new road shoulders would replace existing road shoulders. The project would temporarily halt use of the riparian area by people. Therefore, the proposed project is not anticipated to increase or decrease the area currently occupied by invasive plants or the potential for spreading invasive plant species.

4.5.2.4 Compensatory Mitigation

No compensatory mitigation for invasive plant species is required.

4.5.2.5 Cumulative Impacts

Cumulative impacts caused by the spread of invasive weed species would result from construction of general development projects in Santa Cruz County. Construction of the proposed project would not be expected to add to the cumulative spread of invasive weeds. Additionally, with implementation of the avoidance and minimization efforts, the project would avoid cumulatively adverse effects related to the spread of invasive weed species.

Chapter 5 Permits Required

5.1 Federal Endangered Species Act Consultation Summary

Formal Section 7 consultation with USFWS is required for potential effects of the proposed project on California red-legged frog. As required by the Programmatic Biological Opinion for Projects Funded and Approved under the Federal Aid Program (U.S. Fish and Wildlife Service 2011b), supporting information has been prepared to accompany Caltrans' request for request to initiate formal consultation through the Programmatic BO (Appendix D). It has been determined during informal consultation with USFWS regarding tidewater goby, that the proposed project is not likely to adversely affect this species. A concurrence letter from USFWS will be required in accordance with the ESA.

5.2 Federal Fisheries and Essential Fish Habitat Consultation Summary

It has been determined during informal consultation with NMFS that the proposed project is not likely to adversely affect listed salmonids (CCC steelhead and CCC coho salmon), designated critical habitat, or EFH. A concurrence letter from NMFS will be required in accordance with the ESA. NMFS must also issue a finding that the consultation requirements for EFH under the Magnuson-Stevens Act have been satisfied.

5.3 California Endangered Species Act Consultation Summary

The proposed project is not likely to result in take of CCC coho salmon or other state-listed species. Therefore, no CESA coordination is required.

5.4 California Fish and Game Code

Implementation of the avoidance and minimization measures identified in Chapter 4 would avoid or reduce impacts to bird species protected by Sections 3503 and 3503.5 (Birds and Raptors), 3511 (Fully Protected Birds), and 3513 (Migratory Birds) of the CFGC by avoiding impacts on nesting birds, including white-tailed kite. The project proponent will enter into a Streambed Alteration Agreement with CDFG for the project construction activities that will occur within the Arroyo de San Pedro Regaldo.

5.5 Wetlands and Other Waters Coordination Summary

A delineation of the OHWM of Arroyo de San Pedro Regaldo in the study area was prepared for the proposed project. The delineation map and report are provided in Appendix C.

5.6 Invasive Species (Executive Order 13112)

The proposed project would not result in severe infestations of invasive plant species. Therefore, no coordination with the Santa Cruz County Agricultural Commission is required.

Chapter 6 References

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Appendix A California Natural Diversity Database Records Search

California Department of Fish and Game
Natural Diversity Database
Route 1/9 Intersection Improvements Project - plants
Quads searched - Santa Cruz, Davenport, Felton, Laurel, and Soquel

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	Agrostis blasdalei Blasdale's bent grass	PMPOA04060			G2	S2.2	1B.2
2	Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070			G2?	S2	1B.2
3	Anomobryum julaceum slender silver moss	NBMUS80010			G4G5	S2	2.2
4	Arctostaphylos andersonii Anderson's manzanita	PDERI04030			G2	S2?	1B.2
5	Arctostaphylos glutinosa Schreiber's manzanita	PDERI040G0			G2	S2.1	1B.2
6	Arctostaphylos ohloneana Ohlone manzanita	PDERI042Y0			G1	S1	1B.1
7	Arctostaphylos pajaroensis Pajaro manzanita	PDERI04100			G2	S2.1	1B.1
8	Arctostaphylos silvicola Bonny Doon manzanita	PDERI041F0			G2	S2.1	1B.2
9	Arenaria paludicola marsh sandwort	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1
10	Calyptridium parryi var. hesseae Santa Cruz Mountains pussypaws	PDPOR09052			G3G4T2	S2	1B.1
11	Campanula californica swamp harebell	PDCAM02060			G3	S3	1B.2
12	Carex comosa bristly sedge	PMCYP032Y0			G5	S2?	2.1
13	Carex saliniformis deceiving sedge	PMCYP03BY0			G2	S2.2	1B.2
14	Chorizanthe pungens var. hartwegiana Ben Lomond spineflower	PDPGN040M1	Endangered		G2T1	S1.1	1B.1
15	Chorizanthe robusta var. hartwegii Scotts Valley spineflower	PDPGN040Q1	Endangered		G2T1	S1.1	1B.1
16	Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered		G2T1	S1.1	1B.1
17	Collinsia multicolor San Francisco collinsia	PDSCR0H0B0			G2	S2.2	1B.2
18	Dacryophyllum falcifolium tear drop moss	NBMUS8Z010			G1	S1	1B.3
19	Didymodon norrisii Norris' beard moss	NBMUS2C0H0			G3G4	S3S4	2.2
20	Eriogonum nudum var. decurrens Ben Lomond buckwheat	PDPGN08492			G5T2	S2.1	1B.1
21	Erysimum teretifolium Santa Cruz wallflower	PDBRA160N0	Endangered	Endangered	G2	S2.1	1B.1
22	Fissidens pauperculus minute pocket moss	NBMUS2W0U0			G1G2	S1	1B.2
23	Hesperocyparis abramsiana var. abramsiana Santa Cruz cypress	PGCUP04080	Endangered	Endangered	G1T1	S1.1	1B.2

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24	Hoita strobilina Loma Prieta hoita	PDFAB5Z030			G2	S2	1B.1
25	Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1.1	1B.1
26	Horkelia cuneata ssp. sericea Kellogg's horkelia	PDROS0W043			G4T1	S1.1	1B.1
27	Horkelia marinensis Point Reyes horkelia	PDROS0W0B0			G2	S2.2	1B.2
28	Malacothamnus arcuatus arcuate bush-mallow	PDMAL0Q0E0			G2Q	S2.2	1B.2
29	Maritime Coast Range Ponderosa Pine Forest	CTT84132CA			G1	S1.1	
30	Microseris paludosa marsh microseris	PDAST6E0D0			G2	S2.2	1B.2
31	Mielichhoferia elongata elongate copper moss	NBMUS4Q022			G4?	S2	2.2
32	Monolopia gracilens woodland woollythreads	PDAST6G010			G2G3	S2S3	1B.2
33	Monterey Pine Forest	CTT83130CA			G1	S1.1	
34	North Central Coast Drainage Sacramento Sucker/Roach River	CARA2623CA			G?	SNR	
35	North Central Coast Short-Run Coho Stream	CARA2632CA			G?	SNR	
36	Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
37	Northern Interior Cypress Forest	CTT83220CA			G2	S2.2	
38	Northern Maritime Chaparral	CTT37C10CA			G1	S1.2	
39	Pedicularis dudleyi Dudley's lousewort	PDSCR1K0D0		Rare	G2	S2.2	1B.2
40	Penstemon rattanii var. kleei Santa Cruz Mountains beardtongue	PDSCR1L5B1			G4T2	S2.2	1B.2
41	Pentachaeta bellidiflora white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1.1	1B.1
42	Pinus radiata Monterey pine	PGPIN040V0			G1	S1.1	1B.1
43	Piperia candida white-flowered rein orchid	PMORC1X050			G2	S2	1B.2
44	Plagiobothrys chorisianus var. chorisianus Choris' popcorn-flower	PDBOR0V061			G3T2Q	S2.2	1B.2
45	Plagiobothrys diffusus San Francisco popcorn-flower	PDBOR0V080		Endangered	G1Q	S1.1	1B.1
46	Polygonum hickmanii Scotts Valley polygonum	PDPGN0L310	Endangered	Endangered	G1	S1.1	1B.1
47	Rosa pinetorum pine rose	PDROS1J0W0			G2Q	S2.2	1B.2
48	Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0			G3G4	S3S4.2	4.2

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
49	Stebbinsoseris decipiens Santa Cruz microseris	PDAST6E050			G2	S2.2	1B.2
50	Trifolium buckwestiorum Santa Cruz clover	PDFAB402W0			G1	S1.1	1B.1

California Department of Fish and Game
Natural Diversity Database
Route 1/9 Intersection Improvements Project - Animals
Quads searched: Santa Cruz, Davenport, Felton, Laurel, and Soquel

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	American badger *Taxidea taxus*	AMAJF04010			G5	S4	SC
2	Antioch specid wasp *Philanthus nasalis*	IIHYM20010			G1	S1	
3	California linderiella *Linderiella occidentalis*	ICBRA06010			G3	S2S3	
4	California red-legged frog *Rana draytonii*	AAABH01022	Threatened		G4T2T3	S2S3	SC
5	Cooper's hawk *Accipiter cooperii*	ABNKC12040			G5	S3	
6	Dolloff Cave spider *Meta dolloff*	ILARA17010			G1	S1	
7	Empire Cave pseudoscorpion *Neochthonius imperialis*	ILARAD1010			G1	S1	
8	Empire Cave pseudoscorpion *Fissilicreagris imperialis*	ILARAE5010			G1	S1	
9	Mackenzie's Cave amphipod *Stygobromus mackenziei*	ICMAL05530			G1	S1	
10	Mount Hermon (=barbate) June beetle *Polyphylla barbata*	IICOL68030	Endangered		G1	S1	
11	Ohlone tiger beetle *Cicindela ohlone*	IICOL026L0	Endangered		G1	S1	
12	Opler's longhorn moth *Adela oplerella*	IILEE0G040			G2G3	S2S3	
13	San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	AMAFF08082			G5T2T3	S2S3	SC
14	Santa Cruz kangaroo rat *Dipodomys venustus venustus*	AMAFD03042			G4T1	S1	
15	Santa Cruz long-toed salamander *Ambystoma macrodactylum croceum*	AAAAA01082	Endangered	Endangered	G5T1	S1	
16	Smith's blue butterfly *Euphilotes enoptes smithi*	IILEPG2026	Endangered		G5T1T2	S1S2	
17	Zayante band-winged grasshopper *Trimerotropis infantilis*	IIORT36030	Endangered		G1	S1	
18	black swift *Cypseloides niger*	ABNUA01010			G4	S2	SC
19	burrowing owl *Athene cunicularia*	ABNSB10010			G4	S2	SC
20	coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
21	foothill yellow-legged frog *Rana boylii*	AAABH01050			G3	S2S3	SC
22	great blue heron *Ardea herodias*	ABNGA04010			G5	S4	
23	hoary bat *Lasiurus cinereus*	AMACC05030			G5	S4?	

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24	mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040			G2G3	S2S3	
25	moestan blister beetle *Lytta moesta*	IICOL4C020			G2	S2	
26	monarch butterfly *Danaus plexippus*	IILEPP2010			G5	S3	
27	osprey *Pandion haliaetus*	ABNKC01010			G5	S3	
28	pallid bat *Antrozous pallidus*	AMACC10010			G5	S3	SC
29	saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	ABPBX1201A			G5T2	S2	SC
30	sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101			G5T2	S1	
31	steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened		G5T2Q	S2	
32	tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered		G3	S2S3	SC
33	tricolored blackbird *Agelaius tricolor*	ABPBXB0020			G2G3	S2	SC
34	western pond turtle *Emys marmorata*	ARAAD02030			G3G4	S3	SC
35	western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened		G4T3	S2	SC
36	white-tailed kite *Elanus leucurus*	ABNKC06010			G5	S3	

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 44 items - Thu, Jun. 16, 2011 18:47 c

- During each visit, we provide you with an empty "Plant Press" for collecting items of interest.
- Several report formats are available. Use the CSV and XML options to download raw data.

Reformat list as: Standard List - with Plant Press controls

DELETE unchecked items | check all | check none

open	save	scientific	common	family	CNPS
	✔	**Amsinckia lunaris**	bent-flowered fiddleneck	Boraginaceae	List 1B.2
	✔	**Anomobryum julaceum**	slender silver moss	Bryaceae	List 2.2
	✔	**Arctostaphylos andersonii**	Anderson's manzanita	Ericaceae	List 1B.2
	✔	**Arctostaphylos glutinosa**	Schreiber's manzanita	Ericaceae	List 1B.2
	✔	**Arctostaphylos ohloneana**	Ohlone manzanita	Ericaceae	List 1B.1
	✔	**Arctostaphylos pajaroensis**	Pajaro manzanita	Ericaceae	List 1B.1
	✔	**Arctostaphylos silvicola**	Bonny Doon manzanita	Ericaceae	List 1B.2
	✔	**Arenaria paludicola**	marsh sandwort	Caryophyllaceae	List 1B.1
	✔	**Calyptridium parryi var. hesseae**	Santa Cruz Mountains pussypaws	Portulacaceae	List 1B.1
	✔	**Campanula californica**	swamp harebell	Campanulaceae	List 1B.2
	✔	**Carex comosa**	bristly sedge	Cyperaceae	List 2.1
	✔	**Carex saliniformis**	deceiving sedge	Cyperaceae	List 1B.2
	✔	**Chorizanthe pungens var. hartwegiana**	Ben Lomond spineflower	Polygonaceae	List 1B.1

	✔	**Chorizanthe robusta var. hartwegii**	Scotts Valley spineflower	Polygonaceae	List 1B.1
	✔	**Chorizanthe robusta var. robusta**	robust spineflower	Polygonaceae	List 1B.1
	✔	**Collinsia multicolor**	San Francisco collinsia	Plantaginaceae	List 1B.2
	✔	**Dacryophyllum falcifolium**	tear drop moss	Hypnaceae	List 1B.3
	✔	**Didymodon norrisii**	Norris' beard moss	Pottiaceae	List 2.2
	✔	**Eriogonum nudum var. decurrens**	Ben Lomond buckwheat	Polygonaceae	List 1B.1
	✔	**Erysimum teretifolium**	Santa Cruz wallflower	Brassicaceae	List 1B.1
	✔	**Fissidens pauperculus**	minute pocket moss	Fissidentaceae	List 1B.2
	✔	**Grindelia hirsutula var. maritima**	San Francisco gumplant	Asteraceae	List 1B.2
	✔	**Hesperocyparis abramsiana var. abramsiana**	Santa Cruz cypress	Cupressaceae	List 1B.2
	✔	**Hoita strobilina**	Loma Prieta hoita	Fabaceae	List 1B.1
	✔	**Holocarpha macradenia**	Santa Cruz tarplant	Asteraceae	List 1B.1
	✔	**Horkelia cuneata ssp. sericea**	Kellogg's horkelia	Rosaceae	List 1B.1
	✔	**Horkelia marinensis**	Point Reyes horkelia	Rosaceae	List 1B.2
	✔	**Lessingia micradenia var. glabrata**	smooth lessingia	Asteraceae	List 1B.2
	✔	**Malacothamnus arcuatus**	arcuate bush-mallow	Malvaceae	List 1B.2
	✔	**Micropus amphibolus**	Mt. Diablo cottonweed	Asteraceae	List 3.2
	✔	**Microseris paludosa**	marsh microseris	Asteraceae	List 1B.2
	✔	**Mielichhoferia elongata**	elongate copper moss	Mniaceae	List 2.2
	✔	**Monolopia gracilens**	woodland woolythreads	Asteraceae	List 1B.2

	✔	**Pedicularis dudleyi**	Dudley's lousewort	Orobanchaceae	List 1B.2
	✔	**Penstemon rattanii var. kleei**	Santa Cruz Mountains beardtongue	Plantaginaceae	List 1B.2
	✔	**Pentachaeta bellidiflora**	white-rayed pentachaeta	Asteraceae	List 1B.1
	✔	**Pinus radiata**	Monterey pine	Pinaceae	List 1B.1
	✔	**Piperia candida**	white-flowered rein orchid	Orchidaceae	List 1B.2
	✔	**Plagiobothrys chorisianus var. chorisianus**	Choris' popcorn-flower	Boraginaceae	List 1B.2
	✔	**Plagiobothrys diffusus**	San Francisco popcorn-flower	Boraginaceae	List 1B.1
	✔	**Polygonum hickmanii**	Scotts Valley polygonum	Polygonaceae	List 1B.1
	✔	**Silene verecunda ssp. verecunda**	San Francisco campion	Caryophyllaceae	List 1B.2
	✔	**Stebbinsoseris decipiens**	Santa Cruz microseris	Asteraceae	List 1B.2
	✔	**Trifolium buckwestiorum**	Santa Cruz clover	Fabaceae	List 1B.1

DELETE unchecked items | check all | check none

Appendix B U.S. Fish and Wildlife Service Species List

U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species-list.

Endangered Species Act species-list information for your project is available online and listed below for the following FWS Field Offices:

VENTURA FISH AND WILDLIFE OFFICE
2493 PORTOLA ROAD, SUITE B
VENTURA, CA 93003
(805) 644-1766

Endangered Species Act species-list information for your project is NOT available online for the following FWS Field Offices:

SACRAMENTO FISH AND WILDLIFE OFFICE
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

Project Name:

Highway 1 /Highway 9 Intersection Improvement Project

Project Counties:

Santa Cruz, CA

Project Type:

Transportation

U.S. Fish and Wildlife Service

Natural Resources of Concern

Endangered Species Act Species-list

There are a total of **28** species in your species-list

Species that may be affected by your project: (View all critical habitat on one map)

Amphibians				
California Tiger Salamander (*Ambystoma californiense*) Population: U.S.A. (Central CA DPS)	Threatened	species info		Ventura Fish And Wildlife Office
California red-legged frog (*Rana draytonii*) Population: Entire	Threatened	species info	Final designated critical habitat	Ventura Fish And Wildlife Office
Santa Cruz Long-Toed salamander (*Ambystoma macrodactylum croceum*)	Endangered	species info		Ventura Fish And Wildlife Office
Birds				
California Clapper rail (*Rallus longirostris obsoletus*)	Endangered	species info		Ventura Fish And Wildlife Office
California Least tern (*Sterna antillarum browni*)	Endangered	species info		Ventura Fish And Wildlife Office
California condor (*Gymnogyps californianus*) Population: U.S.A. only	Endangered	species info		Ventura Fish And Wildlife Office
Least Bell's vireo (*Vireo bellii pusillus*)	Endangered	species info		Ventura Fish And Wildlife Office

Natural Resources of Concern

Marbled murrelet (*Brachyramphus marmoratus*) Population: CA, OR, WA	Threatened	species info	Final designated critical habitat	Ventura Fish And Wildlife Office
Southwestern Willow flycatcher (*Empidonax traillii extimus*)	Endangered	species info		Ventura Fish And Wildlife Office
Western Snowy plover (*Charadrius alexandrinus nivosus*) Population: Pacific coastal pop.	Threatened	species info	Final designated critical habitat	Ventura Fish And Wildlife Office
Conifers and Cycads				
Santa Cruz cypress (*Cupressus abramsiana*)	Endangered	species info		Ventura Fish And Wildlife Office
Flowering Plants				
Ben Lomond spineflower (*Chorizanthe pungens hartwegiana*)	Endangered	species info		Ventura Fish And Wildlife Office
Ben Lomond wallflower (*Erysimum teretifolium*)	Endangered	species info		Ventura Fish And Wildlife Office
Marsh Sandwort (*Arenaria paludicola*)	Endangered	species info		Ventura Fish And Wildlife Office
Menzies' wallflower (*Erysimum menziesii*)	Endangered	species info		Ventura Fish And Wildlife Office

Natural Resources of Concern

Monterey gilia (*Gilia tenuiflora arenaria*)	Endangered	species info		Ventura Fish And Wildlife Office
Monterey spineflower (*Chorizanthe pungens pungens*)	Threatened	species info	Final designated critical habitat	Ventura Fish And Wildlife Office
Robust spineflower (*Chorizanthe robusta*)	Endangered	species info	Final designated critical habitat Final designated critical habitat	Ventura Fish And Wildlife Office
Santa Cruz tarplant (*Holocarpha macradenia*)	Threatened	species info	Final designated critical habitat	Ventura Fish And Wildlife Office
Scotts Valley Polygonum (*Polygonum hickmanii*)	Endangered	species info	Final designated critical habitat	Ventura Fish And Wildlife Office
White-Rayed pentachaeta (*Pentachaeta bellidiflora*)	Endangered	species info		Ventura Fish And Wildlife Office
Insects				
Mount Hermon June beetle (*Polyphylla barbata*)	Endangered	species info		Ventura Fish And Wildlife Office
Ohlone tiger beetle (*Cicindela ohlone*)	Endangered	species info		Ventura Fish And Wildlife Office

Natural Resources of Concern

Smith's Blue butterfly (*Euphilotes enoptes smithi*)	Endangered	species info		Ventura Fish And Wildlife Office
Zayante Band-Winged grasshopper (*Trimerotropis infantilis*)	Endangered	species info	Final designated critical habitat	Ventura Fish And Wildlife Office
Mammals				
Southern Sea otter (*Enhydra lutris nereis*) Population: except where EXPN	Threatened	species info		Ventura Fish And Wildlife Office
Reptiles				
Blunt-Nosed Leopard lizard (*Gambelia silus*)	Endangered	species info		Ventura Fish And Wildlife Office
San Francisco Garter snake (*Thamnophis sirtalis tetrataenia*)	Endangered	species info		Ventura Fish And Wildlife Office

FWS National Wildlife Refuges

There are **1** refuges in your refuge list

Ellicott Slough National Wildlife Refuge (510) 792-0222 C/O SAN FRANCISCO BAY NWR COMPLEX P.O. BOX 524 NEWARK, CA94560	refuge profile

Natural Resources of Concern

FWS Migratory Birds

Not yet available through IPaC.

FWS Delineated Wetlands

Not yet available through IPaC.

Appendix C Ordinary High Water Mark Delineation

ICF Jones & Stokes
an ICF International Company

Memorandum

Date: August 24, 2009

To: Gordon Sweet, BKF Engineer

cc: Shelly Benson, Christine Fukasawa, Debbie Loh

From: Kate Giberson, Project Manager

Subject: **Ordinary High Water Mark Delineation for the Santa Cruz Highway 1/Highway 9 Intersection Improvement Project**

Introduction

As you requested, ICF Jones & Stokes conducted a field visit to make a preliminary determination on the U.S. Army Corps of Engineers' (USACE's) jurisdictional boundary for Arroyo de San Pedro Regaldo, a drainage that occurs in the Highway 1/Highway 9 Intersection Improvement Project Area (Figure 1). Arroyo de San Pedro Regaldo is the only potential waters of the United States that occurs in the project area. Based on the data gathered during the field visit, this drainage would be considered an other waters of the United States and subject to regulation under Section 404 of the Clean Water Act. No jurisdictional wetlands were found in the project area.

The purpose of this memorandum is to identify the ordinary high water mark (OHWM) of the drainage to assist BKF in the design process. A summary of the methods used to determine the jurisdictional boundary for the drainage and the results of this effort are summarized in this memorandum.

Methods

A field visit was conducted on August 7, 2009, by ICF Jones & Stokes botanist, Shelly Benson to delineate the OHWM of the drainage. The OHWM for the drainage was identified using the guidance provided in Regulatory Guidance Letter 05-05. The extent of the drainage channel, as defined by the top of bank, was determined to be the same as the position of the OHWM. The OHWM was delineated based on shelving along a terraced stream bank and destruction of terrestrial vegetation at the edge of the terraced bank, (Figures 3 and 4). The OHWM was visible on the south bank of the drainage and mapped using a Trimble GeoXT GPS unit. The OHWM on the north and east bank was obstructed by overhanging vegetation and was inaccessible. The position of the OHWM at these locations were estimated and digitized onto the map.

Results

As stated previously, Arroyo de San Pedro Regaldo is the only other waters that occurs in the project area. The drainage conveys year-round water from surrounding residential and commercial areas. Within the project area, the drainage is confined to a culvert for most of its length. The culvert passes under Highway 9, on the north side of Highway 1, and surfaces on the east side of Highway 9 (Figure 2). The drainage flows east into San Lorenzo River, approximately 0.10 mile downstream. From this point, the San Lorenzo River flows approximately 2 miles to its mouth at Monterey Bay.

The drainage had a defined bed and bank and the bed substrate consisted of cobbles, gravel, and clay. The average width of the OHWM was determined to be 20 feet wide (outside the culvert). A pool was present at the outflow end of the culvert that extended approximately 30 linear feet downstream (Figure 3). A riparian corridor was present within the project area, consisting of dense vegetation located on the banks of the drainage above the OHWM. Species included Himalayan blackberry (*Rubus armeniacus*), arroyo willow (*Salix lasiolepis*), English ivy (*Hedera helix*), plum (*Prunus* sp), eucalyptus (*Eucalyptus* sp.), nasturtium (*Tropaeolum majus*), and coast live oak (*Quercus agrifolia*). The extent of the riparian corridor within the project area is shown in Figure 4. No wetlands were present within the OHWM.

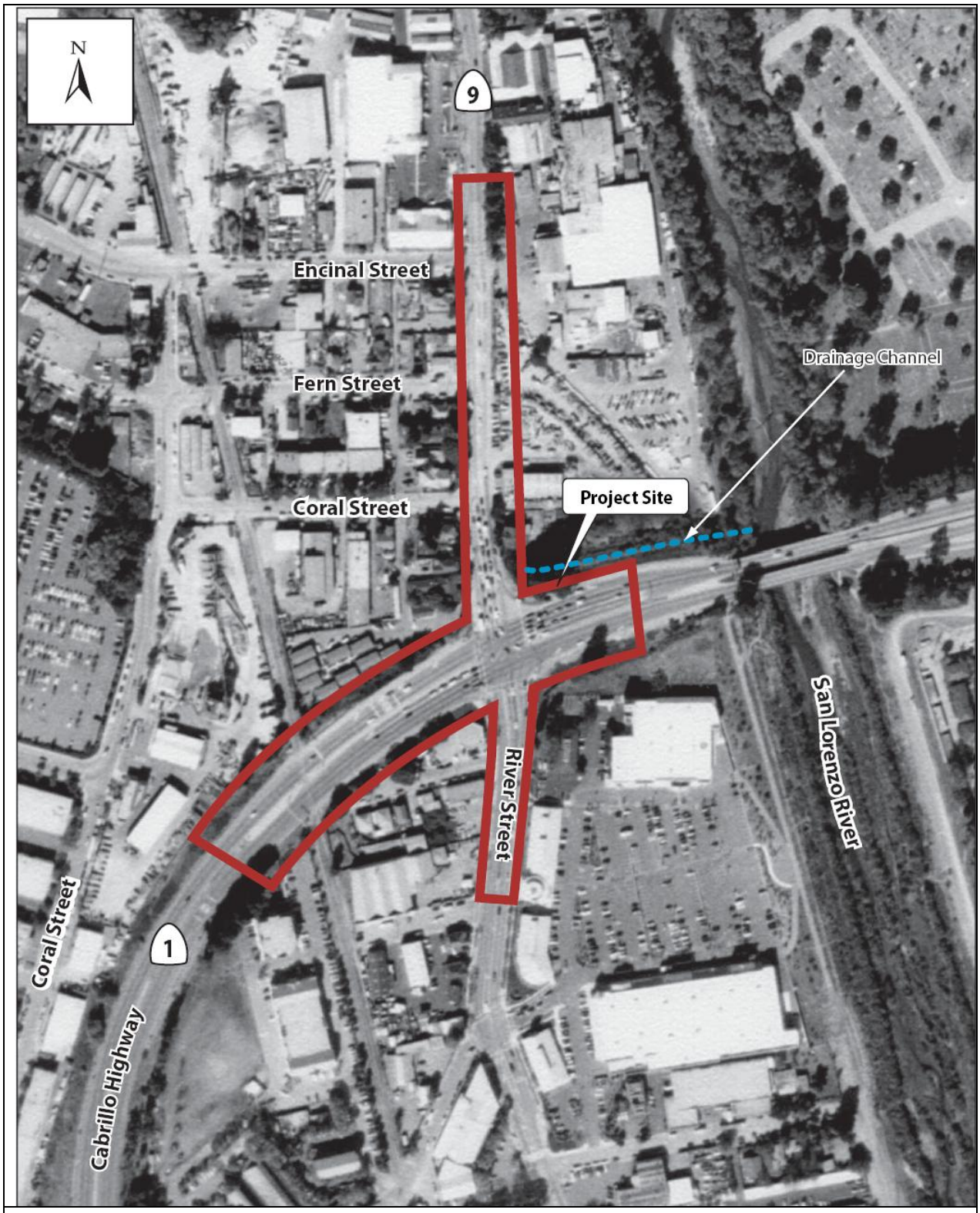


Figure 1. Project Area

Prepared by City of Santa Cruz GIS Services
March, 2006

Aerial Photo Date:
August, 2003

City-wide Creeks and Wetlands Management Plan

N

0 75 150 300
Feet

Disclaimer: This map is a graphic representation only of data provided by the City and County of Santa Cruz. The Management Plan text and tables shall be consulted for specific required distances and setbacks. The author assumes no responsibility nor liability for errors or ommissions. Areas intentionally unmapped include University lands, areas outside of the City limits, and some City-owned protected lands.

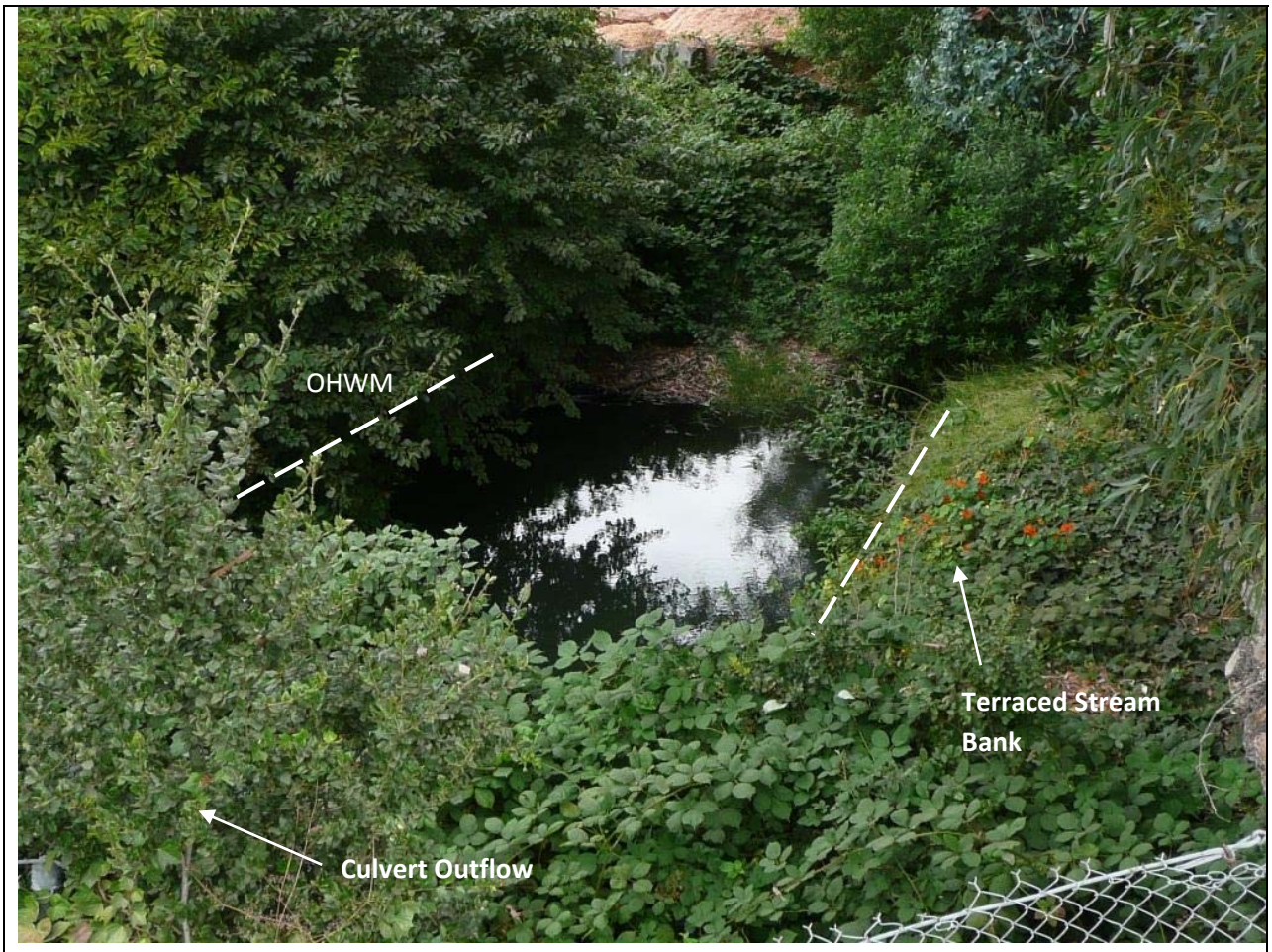


Figure 3. Photograph Showing Ordinary High Water Mark

Note: This figure shows the position of the ordinary high water mark (OHWM) for the Arroyo de San Pedro Regaldo drainage that flows east from Highway 9. All riparian vegetation is rooted above the OHWM. The photo was taken from the east edge of Highway 9, facing east.

N

Feet
0 25 50 100

OHWM

Riparian corridor

Figure 4
Highway 1/Highway 9 Intersection Improvement Project: Ordinary High Water Mark and Riparian Corridor

Q:\Projects\BKF\04566_04\mapdoc\Figures\Fig4_OHWM_Riparian.mxd

Appendix D Supporting Information for Consultation under the Programmatic Biological Opinion for California Red-Legged Frog

Supporting Information for Consultation under the Programmatic Biological Opinion for California Red-Legged Frog for the Route 1/9 Intersection Improvements Project, Santa Cruz County

The following information is provided to support consultation for the finding that the Route 1/9 Intersection Improvements Project would likely adversely affect the California red-legged frog (*Rana draytonii*) under the Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program (U.S. Fish and Wildlife Service 2011).

Description of the Proposed Action

The California Department of Transportation (Caltrans) and City of Santa Cruz (City) propose to implement improvements to the intersection at Route 1 and Route 9/River Street (Route 1/9 intersection) in the City of Santa Cruz, Santa Cruz County, California (Figure 1). The Route 1/9 Intersection Improvements Project (proposed action) would improve traffic operations and provide safety benefits at the existing Route 1/9 intersection by widening the existing intersection to accommodate additional turning vehicle lanes, bicycle lanes, and shoulders. The proposed action would be funded with local, State Transportation Improvement Program, and Federal Transportation Improvement Program funds. The limits of the action area are shown in Figure 2.

The proposed improvements, all of which are standard lane and shoulder width dimensions, would require widening the existing intersection. The majority of the improvements would affect ruderal and landscaped areas along Route 1 and Route 9. Specific information on the types, width, number, and location of vehicle lanes, bicycle lanes, and shoulders is provided in the Natural Environment Study for the proposed action.

At the northeast corner of the Route 1/9 intersection, an earthen embankment would be constructed to support the intersection widening over the drainage culvert that opens into a stream channel known as Arroyo de San Pedro Regaldo (Figure 3). The Arroyo de San Pedro Regaldo extends approximately 450 feet from the existing culvert to its outlet with the San Lorenzo River. The embankment would have a 2:1 slope with the toe of the embankment extending approximately 40 feet beyond the existing roadway (Figure 4). The existing culvert would be extended approximately 25 feet. The existing concrete apron and cutoff wall that extend approximately 25 feet from the existing culvert would remain in place or be reconstructed "in-kind". All in-water construction activities within the Arroyo de San Pedro Regaldo would be conducted during the dry season (July 1 through October 15) to avoid effects on juvenile steelhead. Because the creek is perennial, dewatering would be needed. Dewatering would be accomplished by using small check dams and a bypass pipe to isolate all in-channel activities from flowing water and bypass the flow past the construction site. Construction activities along

the creek banks that do not involve in-water work would be restricted to May 1 through October 15 to minimize effects on California red-legged frog.

Construction Methods

The sequence of activities and construction methods within/near the Arroyo de San Pedro Regaldo are described first, since they are most pertinent to California red-legged frog. The first order of work would be placing environmentally sensitive area (ESA) fencing to establish the construction limits near the arroyo and installing temporary construction/water pollution control devices. Smaller bobcat dozers and graders would then be used to clear and grub the construction area. If the creek is flowing, a pump and/or gravity diversion would be used to bypass the flow through a plastic pipe (large enough to accommodate the entire flow of the creek) to a point downstream of the construction area. Temporary cofferdams would be constructed as needed to isolate the construction area from the live stream and would consist of clean imported gravel, impermeable liners (e.g., plastic), water bladders, and/or sand bags. The culvert, wingwalls, apron, cut-off wall would be extended or reconstructed; and the embankment would be extended, compacted, and graded. Smaller bulldozers/graders (i.e. bobcat), pickup trucks, dump trucks, concrete trucks, pump trucks, and hand held compactors and jackhammers would be used for the embankment/culvert extension work. Pickup trucks, dump trucks, concrete trucks, and pump trucks would be operated from the roadway above the arroyo. The disturbed area would be restored by seeding and replanting the area, as discussed in the next section, *Habitat Restoration Plan*.

Construction of the project, in general, will involve the following activities: setting up staging areas, installation of temporary construction areas and storm water pollution prevention devices, installation of traffic control and traffic handling devices and establishing detours, demolition, trenching associated with placement of drainage facilities and utilities, placement of concrete improvements, installation of lighting and traffic signals, grading and roadway paving operations, and clean up and equipment removal. The type of equipment and construction vehicles that could be used during construction include forklift; combination back hoe/frontloader/excavator, bulldozer (including bobcat); concrete mixer; crane; pump truck; pickup truck; compactor; roller; dump truck; spreader; and sweeper.

All refueling, maintenance, and staging of equipment and vehicles would occur at least 60 feet from riparian habitat and water bodies, and in locations where spills would not drain directly toward aquatic habitat (Figure 3).

Habitat Restoration Plan

A detailed restoration plan will be prepared and submitted to USFWS as part of the final design of the proposed action. Mitigation that will be implemented to compensate for the temporary and permanent effects on riparian forest vegetation in the action area is described below. This mitigation includes the preparation of a mitigation planting plan (i.e., habitat restoration plan).

- Caltrans/the City will compensate for temporary construction-related loss of riparian vegetation by replanting the temporarily disturbed area with the native species removed,

including coast live oak and arroyo willow. Replanting will occur after completion of the construction activities and before October 15 to minimize erosion and creek sedimentation.

- Caltrans/the City will compensate for the permanent loss of riparian vegetation by restoring the riparian forest adjacent to the permanent impact area along the Arroyo de San Pedro Regaldo at a minimum ratio of 1:1 (1 acre restored for every 1 acre permanently affected). This ratio will be confirmed through coordination with state and federal agencies as part of the permitting process for the proposed project.
- Caltrans/the City will prepare a mitigation planting plan, which will include a species list and number of each species, planting locations, and maintenance requirements. Non-woody riparian species plantings and small trees will consist of cuttings taken from local plants, or plants grown from local material obtained within the Arroyo de San Pedro Regaldo watershed. Replacement of any trees with a circumference of 44 inches or more (equivalent to a diameter of approximately 14 inches or more) measured at 54 inches above the existing grade will be in accordance with the City's heritage tree ordinance, and will include either three 15-gallon trees or one 24-inch box size specimen tree for each heritage tree removed. Planted species will include coast live oak (*Quercus agrifolia*), arroyo willow (*Salix lasiolepis*), California bay (*Umbellularia californica* var. *californica*), and Himalayan blackberry (*Rubus armeniacus*). Native understory species, such as sedge species (*Carex* spp.), mugwort (*Artemisia douglasiana*), California wild rose (*Rosa californica*), poison-oak (*Toxicodendron diversilobum*), California wild grape (*Vitis californica*), or other suitable native species will be planted.
- Plantings will be monitored annually for 3 years or as required in the project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.

Construction Monitoring Plan

The construction monitoring plan will consist of the following components.

- Caltrans/the City will retain a USFWS-approved biologist to conduct construction monitoring in and adjacent to the Arroyo de San Pedro Regaldo. The biological monitor will assist the construction crew as needed to comply with all project implementation restrictions and guidelines.
- Ground disturbance will not begin until written approval is received from the USFWS that the biologist is qualified to conduct the work, unless the individual has been approved previously and USFWS has not revoked that approval.
- Before any activities begin, the USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the specific measures that are being implemented, and the boundaries within which the project may be accomplished.
- A USFWS-approved biologist will survey the project site 48 hours before the onset of work activities (including fence installation). If any life stage of California red-legged frog is

found, the approved biologist will relocate the California red-legged frog the shortest distance possible to a location that will not be affected by project activities.

- Caltrans/the City or its contractor will install orange construction barrier fencing along the creek channel and riparian forest to delineate the boundary of the work area and identify environmentally sensitive areas to be protected during construction.
- The approved monitor will inspect the fencing once a week along the creek and riparian vegetation in the construction area.
- Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs.
- A USFWS-approved biologist will be present at the work site until all California red-legged frogs have been removed, workers have been instructed, and disturbance of habitat has been completed. After this time, Caltrans/the City will designate a person to monitor compliance with all minimization measures. If the monitor or USFWS-approved biologist recommends that work be stopped, they will notify the resident engineer, who will eliminate the effect or halt actions causing the effect. If work is stopped, USFWS will be notified as soon as possible.

Site Assessment Results

A site assessment for California red-legged frog was conducted on August 4, 2005 and November 18, 2010. The site assessments were conducted in the study area and within 1-mile of the study area, and were conducted in accordance with USFWS guidelines (U.S. Fish and Wildlife Service 2005). Surveys according to USFWS guidelines have not been conducted. The Arroyo de San Pedro Regaldo provides small areas of breeding habitat (pools) at the west and east ends of the study area. The remainder of the creek provides suitable refuge habitat. Photographs of the drainage and adjacent riparian forest are shown in Figures 5, 6, and 7. The upland is limited to the riparian corridor along the Arroyo de San Pedro Regaldo and the San Lorenzo River. There are 16 records of California red-legged frog occurrences within a 5-mile radius of the project area (California Natural Diversity Database 2011). The closest recorded sightings of California red-legged frogs are approximately 1.25 miles west of the project area, in Moore Creek (California Natural Diversity Database 2011). This occurrence is not hydrologically connected to the Arroyo de San Pedro Regaldo in the project area or the San Lorenzo River.

Effects of the Proposed Action

Movement of construction equipment on the creek banks and placement of fill in the channel could result in the injury or mortality of California red-legged frogs. In-water construction activities would occur during the dry season (July 1 through October 15); since the creek appears to be perennial, water may still be present. Construction activities along the creek banks that do not involve in-water work would be restricted to May 1 through October 15. These project specifications would minimize impacts on California red-legged frog. Although accidental spills

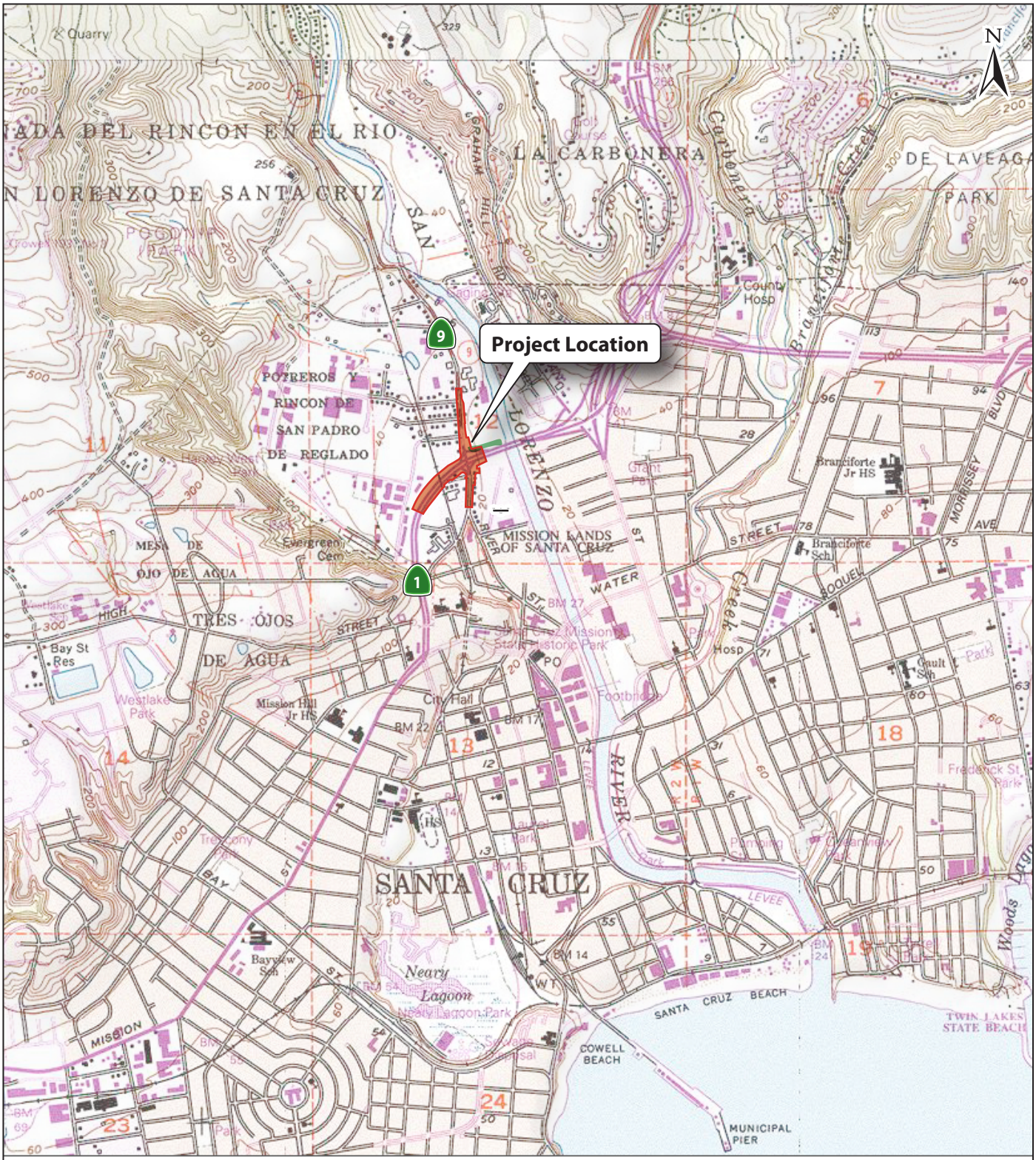
could still occur, contamination of aquatic habitat from vehicle refueling and operation of vehicles and equipment adjacent to the Arroyo de San Pedro Regaldo and subsequent injury or death of California red-legged frog would be minimized through staging areas being located at least 60 feet from riparian habitat and water bodies, and implementation of best management practices to control the discharge of pollutants to the Arroyo. Construction of the earthen embankment and extension of the existing culvert within the creek channel would result in the permanent loss of 0.01 acre of creek channel and 0.03 acre of riparian forest that provides suitable habitat for California red-legged frog (Figure 8). There would also be a temporary loss of 0.01 acre of creek channel and 0.04 acre of riparian forest habitats.

References

California Natural Diversity Database. 2011. RareFind 3, Version 3.1.0 (June 4, 2011 update). Sacramento, CA: California Department of Fish and Game. Search of Santa Cruz, Davenport, Felton, Laurel, and Soquel U.S. Geological Survey 7.5-minute quadrangles.

U.S. Fish and Wildlife Service. 2005. *Revised Guidance on Site Assessment and Field Surveys for California Red-Legged Frogs*. August. Sacramento, CA: Ecological Services, Sacramento Field Office.

———. 2011. *Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program* (8-8-10-F-58). May 4. Ventura Fish and Wildlife Office, Ventura California.



Base Map: USGS 7.5' series Santa Cruz, California quadrangle (1994)

Graphics/Projects/04566.04 BKF Engineering (07-11) SS

Figure 1
Location of the Proposed Action

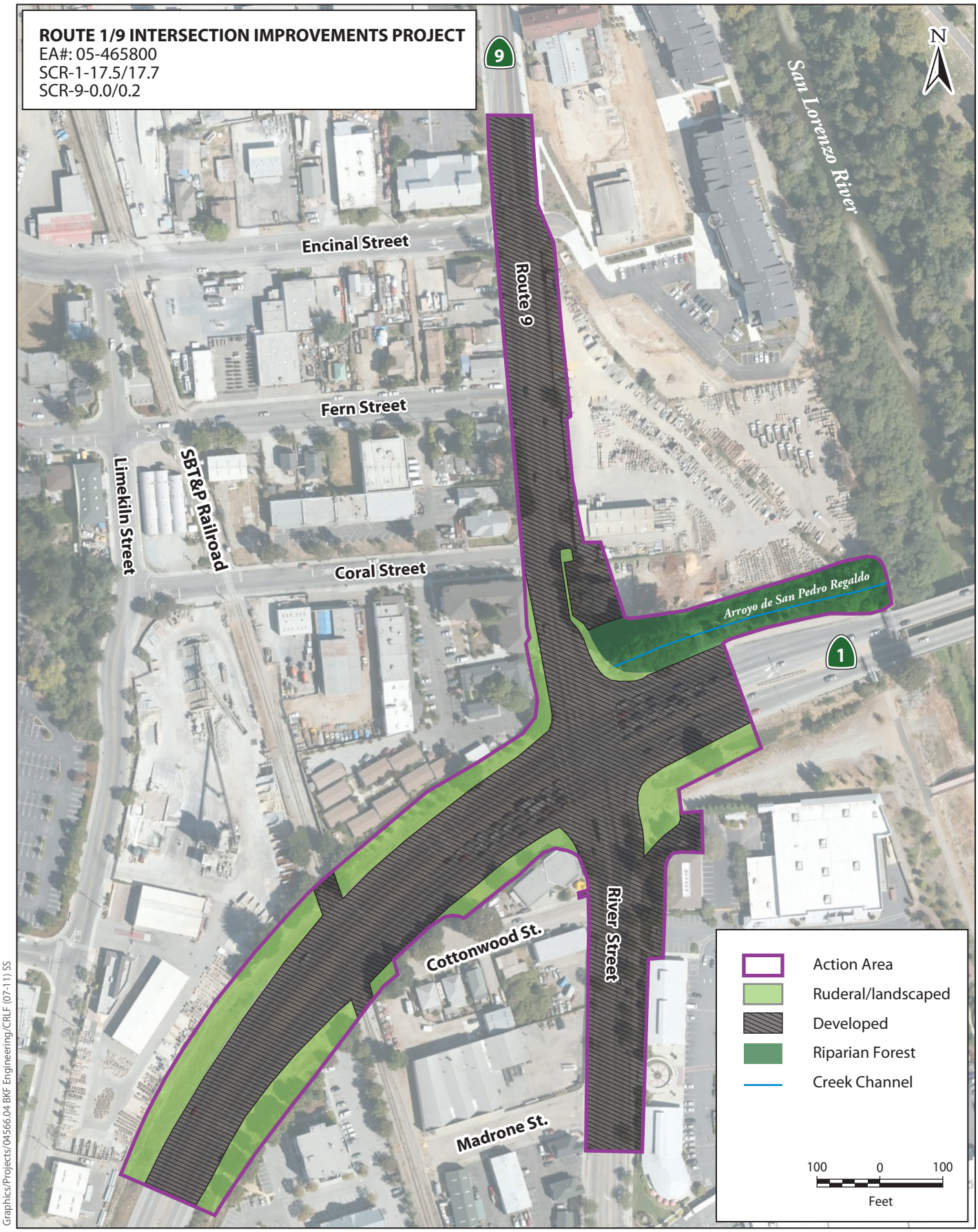


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Figure 2
Natural Communities and Development in the Action Area

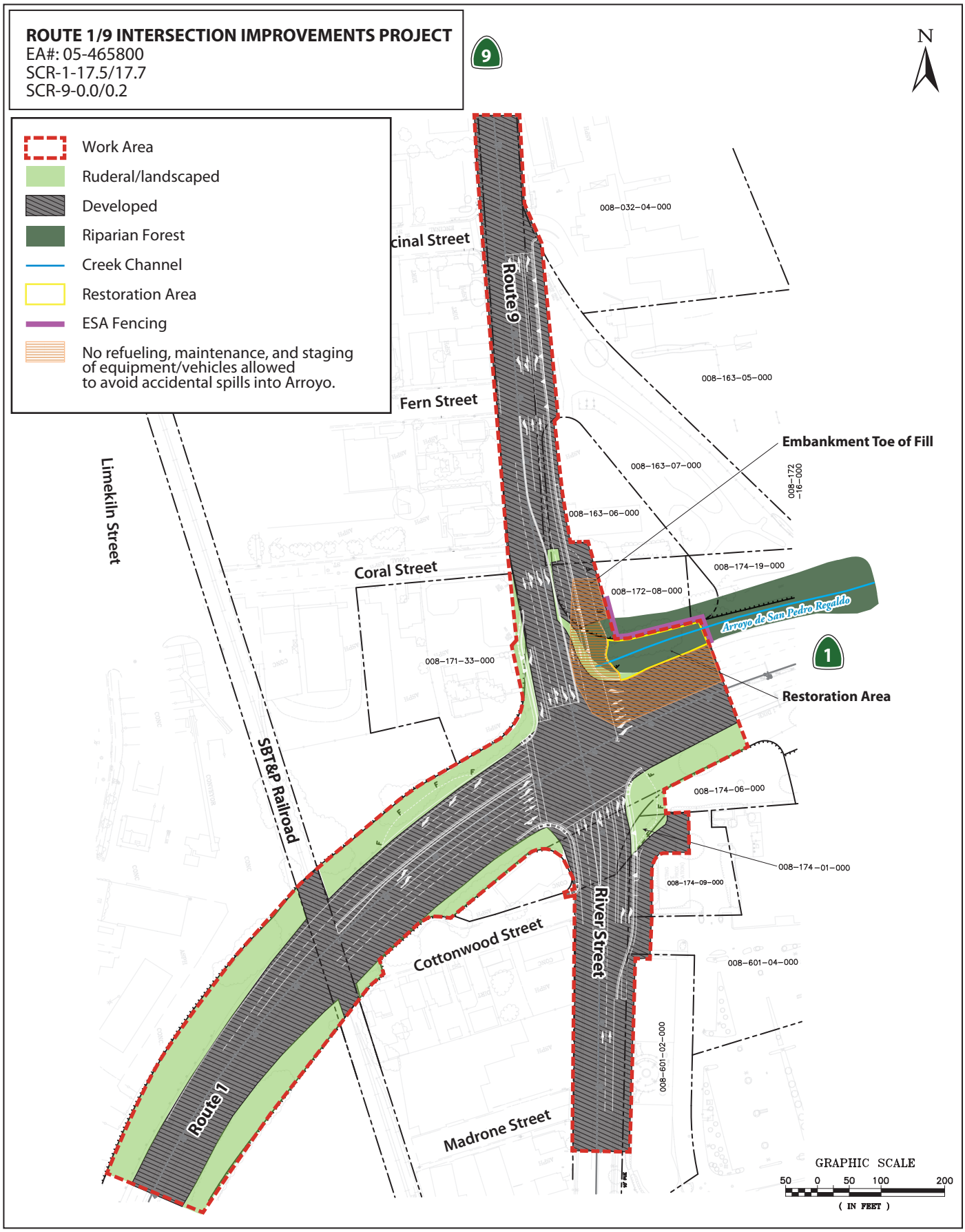

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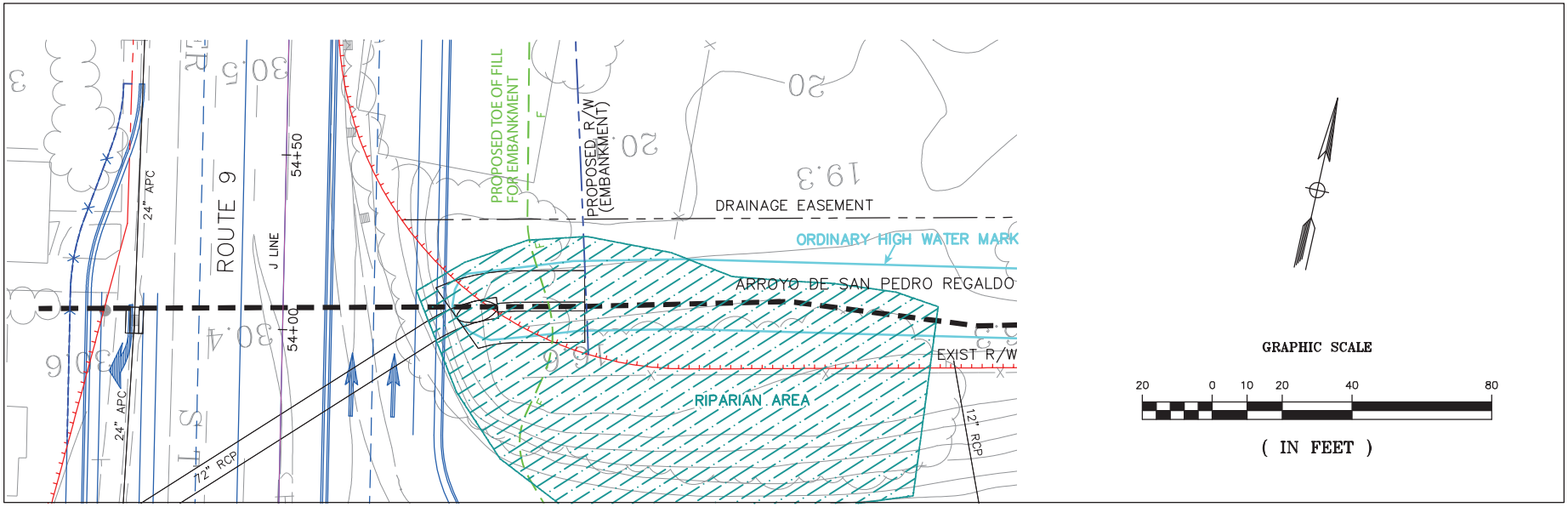
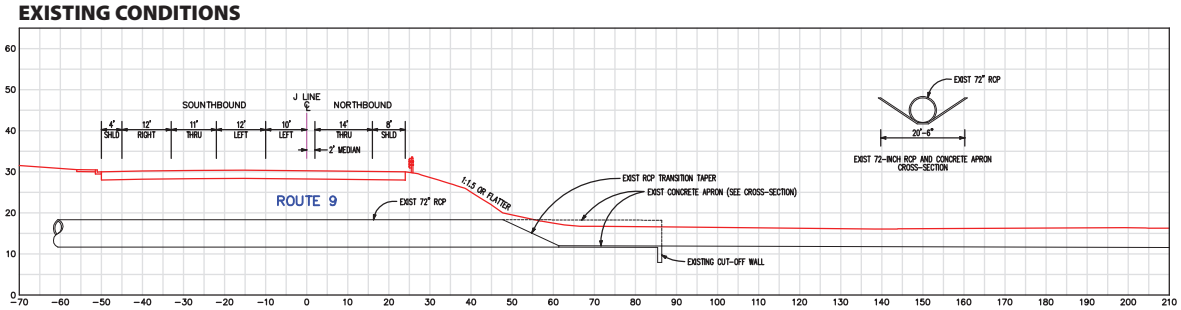
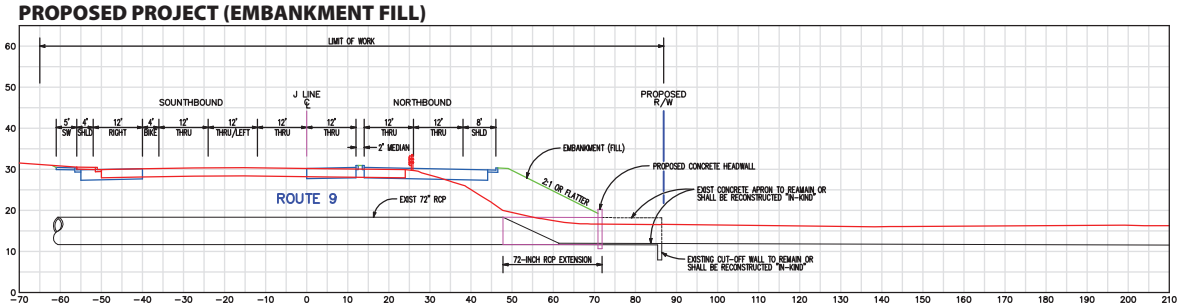
Figure 3
Plan View







Source: BKF Engineering

Graphics/Projects/04566.04 BKF Engineering (09-11) SS

Figure 4
Cross Sectional View of Existing Conditions and Improvements within the Arroyo de San Pedro Regaldo

Photo 5a. Looking upstream at the western end of the drainage.

Photo 5b. Western portion of drainage where the vegetation has been cut.

Graphics ...04566.04 (12/10) AB

Figure 5
Arroyo de San Pedro Regaldo

Photo 6a. Portion of drainage where vegetation became very dense.

Photo 6b. Looking downstream at the eastern end of the drainage.

Graphics ...04566.04 (12/10) AB

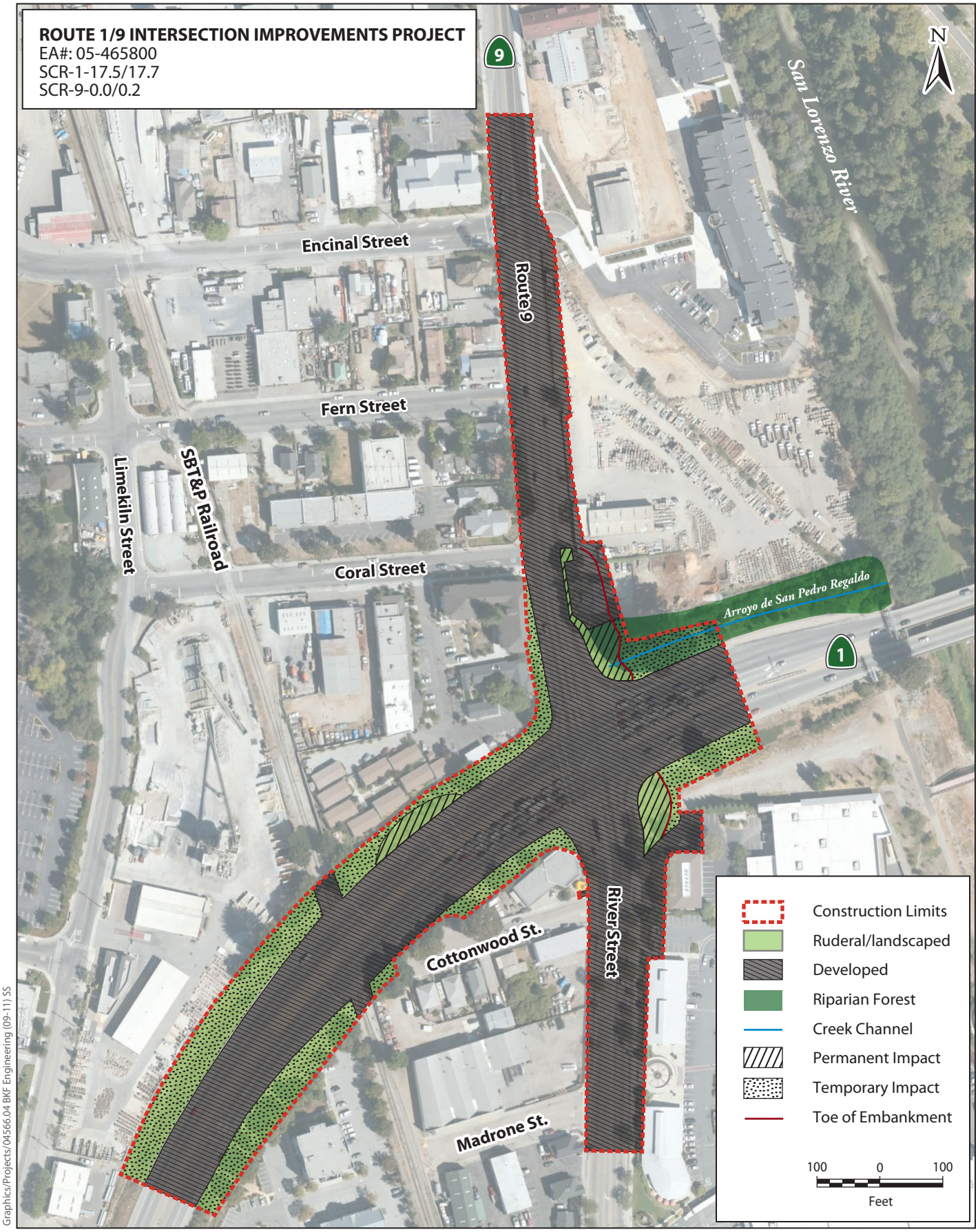
Figure 6
Arroyo de San Pedro Regaldo

Photo 7a. Pool #1 at the west end of the drainage.

Photo 7b. Pool #2 at the east end of the drainage.

Graphics ...04566.04 (12/10) AB

Figure 7
Arroyo de San Pedro Regaldo



Graphics/Projects/04566.04 BKF Engineering (09-11) SS

Figure 8
Temporary and Permanent Impacts to Natural Communities

Appendix E Correspondence Related to Tidewater Goby

DEPARTMENT OF TRANSPORTATION
50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
http://www.dot.ca.gov/dist05/

Flex your power!
Be energy efficient!

December 30, 2011

Christopher J. Diel, Fish & Wildlife Biologist
U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003

Subject: Route 1/Route 9 Intersection Improvement Project, City of Santa Cruz, California

Dear Mr. Diel:

The California Department of Transportation (Caltrans) and the City of Santa Cruz (City) propose to implement improvements to the intersection at Route 1 and Route 9/River Street (Route 1/9) in the City of Santa Cruz, Santa Cruz County, California (Figure 1 in the attached memorandum). In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, Caltrans is requesting the U.S. Fish and Wildlife's (USFWS) written concurrence with our determination that the Route 1/9 Intersection Improvements Project (proposed action) is not likely to adversely affect the federally endangered tidewater goby (*Eucyclogobious newberryi*) or its designated critical habitat.

The basis for this determination is presented below. This letter includes a description of the proposed action, consultation history, proposed measures to avoid incidental take of tidewater gobies and other listed species, and the results of a site assessment to determine the potential for tidewater gobies to occur in the action area (attached memorandum).

Description of the Proposed Action

The proposed action would improve traffic operations at the existing Route 1/9 intersection by widening the existing intersection to accommodate additional turning vehicle lanes, bicycle lanes, and shoulders. The additional turning lanes would improve the level of service at the intersection and provide safety benefits. The proposed action would be funded with local, State Transportation Improvement Program, and Federal Transportation Improvement Program funds. The limits of the action area are shown in Figure 2 in the attached memorandum.

The proposed improvements, all of which are standard lane and shoulder width dimensions, would require widening the existing roadway at the intersection. At the northeast corner of the Route 1/9 intersection, an earthen embankment would be constructed to support the roadway widening over the drainage culvert that opens into a stream channel known as Arroyo de San Pedro Regaldo (Arroyo). The Arroyo extends approximately 450 feet from the existing culvert to its outlet with the San Lorenzo River at approximately river mile 2. The embankment would have a 2:1 slope with the toe of the embankment extending approximately 40 feet beyond the existing roadway. The existing culvert would be extended approximately 25 feet. The existing concrete apron and cutoff wall that extend approximately 25 feet from the existing culvert would remain in place or be reconstructed "in-kind". All in-water construction activities within the Arroyo would be conducted during the dry season (July 1 through October 15). Dewatering would be accomplished by using small check dams and bypass pipes to isolate all in-channel activities from flowing water and bypass the flow past the construction site.

The proposed action includes the following measures to avoid, minimize, and compensate for effects on sensitive habitat and special-status fish and wildlife species:

- Caltrans/City propose to conduct in-water construction activities during the dry season (July 1-October 15) to avoid the primary migration seasons of adult and juvenile salmonids and minimize the

potential for adverse effects on water quality and aquatic habitat in the San Lorenzo River resulting from temporary increases in suspended sediment and turbidity.

- Caltrans/City will require the contractor to construct a temporary cofferdam to isolate in-channel construction activities from the stream. The cofferdam will be constructed of clean imported gravel, impermeable liners (e.g., plastic), water bladders, and/or sand bags, and used in conjunction with a bypass pipe (large enough to accommodate the entire flow) to isolate the construction area from the stream and bypass the flow around the construction area to the channel below.
- During dewatering operations, water will be pumped out of the isolated construction area to water storage containers or a temporary detention or filtration basin away from the stream channel to prevent direct discharge of this water to the creek. All gravel, sand bags, liners, pipes, concrete debris, and other materials will be removed from the channel before stream flow is restored to the dewatered area.
- Caltrans/City will prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Plan (WPCP) in accordance with Caltrans' *Stormwater Pollution Prevention Plan and Water Pollution Control Program Preparation Manual*. The SWPPP and WPCP will include all applicable erosion control, slope stabilization, and spill prevention and control BMPs to avoid or minimize potential adverse effects on water quality and aquatic habitat. All erosion control and slope stabilization measures will be in place by October 15 and monitored and maintained in accordance with the SWPPP and WPCP.
- Caltrans/City will avoid, minimize, and compensate for impacts to riparian vegetation by avoiding native trees and shrubs to the extent practicable and compensating for temporary disturbance (0.04 acre) and permanent losses (0.03 acre) of riparian vegetation. Caltrans/ City will prepare and implement a mitigation planting plan, which will include a 3-year monitoring and maintenance plan.
- Caltrans/City will restore temporarily disturbed portions of the stream channel immediately downstream of the culvert (0.01 acre[1]) to original grade and pre-construction conditions following construction. Permanent losses of stream habitat (0.01 acre[1]) will be compensated by implementing one or a combination of the following options: 1) purchasing mitigation credits for stream/riparian habitat at a locally approved mitigation bank or 2) implementing compensatory riparian mitigation in addition to the acreage restored for loss of riparian habitat.

Detailed descriptions of these and other avoidance, minimization, and compensation measures can be found in the project's Natural Environment Study submitted to Caltrans in July 2011.

Consultation History

ICF International (ICF) biologists reviewed existing information and conducted field surveys in 2005, 2007, 2010, and 2011 to identify biological communities and sensitive species that could be present in the action area. These surveys included a recent survey (November 2010) by ICF wildlife biologist Jennifer Haire to update the site assessment for California red-legged frog (CRLF). An updated CRLF site assessment report was submitted to the USFWS in April 2011.

On April 11, 2011, Ms. Haire and ICF fisheries biologist Bill Mitchell spoke to Chris Diel, Ventura Field Office, by phone to discuss additional information on the project design, site characteristics, and the potential for occurrence of CRLF and tidewater goby. Mr. Diel generally agreed that physical barriers could prevent tidewater goby from occurring in the Arroyo but also wanted to talk to the tidewater goby lead in his office (Chris Dellith) before making a decision regarding consultation requirements. In a subsequent telephone conversation between Ms. Haire and Mr. Diel on April 28, 2011, Mr. Diel stated that tidewater goby could occur in the San Lorenzo River adjacent to the Arroyo, and that a site visit was needed to determine if there is enough of an elevation change to preclude tidewater goby from entering the Arroyo. Mr. Mitchell spoke with Mr. Dellith by telephone on May 12, 2011. Mr. Dellith

[1] Impact acreages include the stream channel and banks up to the ordinary high water mark.

stated that the potential exists for tidewater goby to occur in the Arroyo based on recent documentation of their occurrence well inland of tidal habitat in other streams. He also said that if there is evidence of a migration barrier either in the Arroyo (i.e., the outlet is elevated above the San Lorenzo River during normal spring flows) or San Lorenzo River (e.g., presence of steep riffles below the Arroyo), tidewater goby would not likely be present in the project area. A field survey and site assessment was conducted on June 1, 2011 to address this question and document the general suitability of habitat conditions for tidewater goby in the project area.

Field Survey and Site Assessment

On June 1, 2011, ICF fisheries biologists Rebecca Sloan and Donna Maniscalco and Gary Kittelson (Kittleson Environmental Consulting, consulting biologist for the City of Santa Cruz) conducted a field survey of the Arroyo and the San Lorenzo River between the Arroyo and Water Street Bridge approximately 0.5 mile downstream of the Arroyo outlet. Based on the results of this survey, past fish sampling efforts in the San Lorenzo River, and a review of relevant information on the life history, distribution, and ecology of tidewater gobies, it was concluded that tidewater gobies are unlikely to occur in the project area. The results of this assessment and basis for this conclusion are presented in the attached memorandum.

Conclusion

Based on review of the above information, Caltrans concludes that the Route 1/9 intersection project is not likely to adversely affect tidewater goby or its designated critical habitat. The San Lorenzo River and Arroyo are not within the designated habitat of tidewater goby. In addition, the attached memorandum cites a number of factors that would likely preclude the occurrence of tidewater goby in the Arroyo and San Lorenzo River in the vicinity of the Arroyo. The most significant factor is the presence of a major riffle in the San Lorenzo River approximately 0.5 mile downstream of the Arroyo outlet (just downstream of the Water Street Bridge). This is supported by the failure to detect tidewater gobies upstream of the Water Street Bridge during past fish sampling efforts. In addition, the potential for temporary construction-related water quality effects on tidewater goby and their habitat downstream of this point is considered discountable with proposed avoidance, minimization, and compensation measures implemented prior to, during, and after construction of the proposed action.
Please direct any questions regarding this letter to Jim Walth, Caltrans District 5 biologist, at 805- 542-4657.

Sincerely,

Jim Walth
Associate Biologist
Central Coast Environmental Management Branch

Attachment (4)

Memorandum

Date:	July 21, 2011
To:	Yvonne Hoffman, Environmental Manager, Caltrans District 5 Jim Walth, Associate Biologist, Caltrans District 5
Cc:	Gordon Sweet, Project Engineer, BKF Engineers Christophe Schneiter, Assistant Public Works Director, City Engineer, City of Santa Cruz
From:	William Mitchell and Rebecca Sloan, ICF International Fisheries Biologists Debbie Loh, ICF International Project Manager
Subject:	**Assessment of the Potential for Tidewater Goby to Occur in the City of Santa Cruz Route 1/Route 9 Intersection Improvement Project Area**

Introduction

The California Department of Transportation (Caltrans) and the City of Santa Cruz propose to implement improvements to the intersection at Route 1 and Route 9/River Street (Route 1/9 intersection) in the City of Santa Cruz, Santa Cruz County, California (Figure 1). The project would improve traffic operations at the existing Route 1/9 intersection by widening the existing intersection to accommodate additional turning vehicle lanes, bicycle lanes, and shoulders. The additional turning lanes would improve the level of service at the intersection and provide safety benefits. The proposed project includes extending an existing culvert and placing earthen fill at the northeast corner of the Route 1/9 intersection, resulting in disturbance of aquatic habitat in the Arroyo de San Pedro Regaldo (Arroyo), a small tributary channel that extends from the culvert to the San Lorenzo River at approximately river mile 2 (Figure 2).

ICF International (ICF) assessed the potential for the Route 1/9 intersection project to affect tidewater goby (*Eucyclogobius newberryi*), an endemic California fish species that is listed as endangered under the federal Endangered Species Act (ESA). The results of this assessment, reported in this memorandum, are intended to support a determination of whether or not the project is likely or not likely to adversely affect this species in accordance with ESA Section 7 consultation requirements.

On June 1, 2011, ICF fisheries biologists Rebecca Sloan and Donna Maniscalco and Gary Kittelson (Kittleson Environmental Consulting, consulting biologist for the City of Santa Cruz) conducted a field survey of the Arroyo and the San Lorenzo River adjacent to and downstream of the Arroyo. The purpose of this survey was to evaluate the potential for tidewater goby to occur in the project area based on site conditions and current information on the life history, distribution, and ecology of tidewater gobies in the San Lorenzo River and other central California streams.

Species Status and Background Information

The tidewater goby was listed as endangered throughout its range on March 7, 1994 (59 FR 5494 5499). The U.S. Fish and Wildlife Service (USFWS) designated critical habitat for tidewater goby on November 20, 2000, and revised the critical habitat designation on January 31, 2008 (73 FR 5920). The Arroyo and San Lorenzo River are not designated as critical habitat for tidewater goby but are part of Recovery Sub-Unit GB8 in the Recovery Plan for the Tidewater Goby (USFWS 2005).

The following is a brief summary of relevant life history information obtained from several sources (Moyle 2002; U.S. Fish and Wildlife Service 2005, 2007; 73 FR 5920). Tidewater gobies occur in coastal lagoons, estuaries, and marshes at the mouths of major stream drainages. The species is benthic (living on the bottom) and its habitat is characterized by brackish, shallow lagoons and lower stream reaches where the water is fairly still but not stagnant. Important habitats include stable lagoons formed by sandbars at the mouths of streams during the later spring, summer, and fall. Tidewater gobies prefer waters with relatively low salinity (less than 12 parts per thousand [ppt]) but they have wide salinity tolerances (0–42 ppt), enabling them to occupy freshwater streams and withstand some exposure to marine waters. Optimal habitats are brackish, shallow-water areas (less than 2 meters deep) with sandy bottoms and emergent vegetation. Tidewater gobies prefer slack water or low-velocity areas (but not stagnant), avoiding areas with steep gradients or substantial currents. Vegetation provides important cover from predators and shelter during flood events. Backwater marshes, including lateral sloughs, also provide important refuges that reduce the likelihood that tidewater gobies will be flushed out of the lagoons or estuaries during high winter flows. Tidewater gobies also occur in the low-gradient sections of freshwater streams upstream or tributary to brackish water habitats. Existing records indicate that tidewater gobies can occur 1.6 to 7.3 miles upstream from the ocean. Sub-adult and adult gobies appear to move upstream in summer and fall, and there is evidence of spawning in these upstream areas. Variation in the extent of these upstream movements may be related to salinity but high stream gradient and other physical barriers (e.g., beaver dams, sills) may be more important in limiting upstream dispersal.

The available tidewater goby habitat in the San Lorenzo River encompasses 66 acres of the lower river (USFWS 2005). In May 2004, Camm Swift and Gary Kittleson observed tidewater goby at this locality for the first time during seining efforts associated with the U.S. Army Corps of Engineers Riverbend Project (Gary Kittleson, personal communication; USFWS 2005). The project area extended from the Laurel Street Bridge (located approximately 1 mile downstream of the Arroyo) to the Third Street train trestle bridge (located at the mouth of the San Lorenzo River) (City of Santa Cruz Urban River Plan Task Force 2003). The population was believed to have been locally extirpated but since 2004 has persisted in low numbers (Gary Kittleson, personal communication).

Mr. Kittleson has consistently found tidewater gobies while seining or dip netting for various City projects over the years, but has never found any evidence of gobies above the Water Street Bridge, approximately 0.5 mile downstream of the mouth of the Arroyo. Jeff Hagar, a fisheries biologist who often consults with the City of Santa Cruz Department of Water, has, over the years, routinely sampled the San Lorenzo River reach that includes the Arroyo outlet. This reach of the San Lorenzo

River extends from the City of Santa Cruz's water intake, located approximately 0.5 mile upstream of the Arroyo, to the Water Street Bridge. Mr. Hagar has not found tidewater goby during his surveys of this upstream reach (Gary Kittleson, personal communication). In 2005, the USFWS concluded that tidewater gobies were not likely to occur in the San Lorenzo River at the site of the proposed bike/pedestrian bridge (located approximately 350 feet downstream of the Arroyo outlet) based on surveys conducted by Mr. Hagar and the presence of unsuitable habitat conditions (swift water currents and substrate dominated by gravel) (Pereksta, personal communication).

Tidewater goby populations in the San Lorenzo River are currently characterized as intermittent and dependent on recolonization from adjacent source populations (Corcoran Lagoon located approximately 1 mile east of the San Lorenzo River). Known or potential threats to this population include municipal runoff, stream channelization, water diversions and groundwater pumping, and native predators. Major constraints to the establishment and persistence of tidewater goby populations in the San Lorenzo River are channelization of the lagoon and lower river with little refuge from high flows and frequent breaching of the sandbar in summer.

Site Description

The Arroyo extends approximately 450 feet from the existing culvert at the Route 1/9 intersection to its outlet with the San Lorenzo River (Figure 3a, Photos 1 and 2). The Arroyo receives flows from the watershed draining portions of the City of Santa Cruz and the University of California, Santa Cruz campus. The vegetation community is dominated by Himalayan blackberry, willow, bulrush, eucalyptus, and grasses. A portion of the riparian vegetation along the Arroyo is heavily disturbed by foot traffic associated with homeless encampments. The substrate was primarily silt, sand, and small gravels.

At the time of the survey, the creek was flowing at approximately 1–2 cubic feet per second. The presence of water was also noted in August of 2005 and 2009, indicating that the Arroyo is likely perennial. Between the culvert and the San Lorenzo River, the Arroyo had two notable habitats: an approximate 25-foot length of channel lined with *Typha* sp. (Figure 3b, Photo 3), and a small pool, approximately 10 feet by 10 feet, at the outfall of the culvert (Figure 3b, Photo 4). The elevation of the water surface of the Arroyo at its outlet was the same elevation as the water surface of the San Lorenzo River (Figure 3a, Photo 2). There is no significant elevation difference between the channel bed of the Arroyo and that of the San Lorenzo at the confluence (Gary Kittleson, personal communication).

The San Lorenzo River between the Arroyo and the Water Street Bridge (approximately 0.5 mile downstream of the Arroyo) is a wide channel that is characterized by a number of smaller braided channels confined between two levees (Figure 3c, Photo 5). Willows dominate the river channel between the levees. Just downstream of the Water Street Bridge is a major riffle with faster water than observed throughout the remainder of the surveyed reach (Figure 3c, Photo 6).

Potential for Tidewater Goby to Occur in the Project Area

Based on the general habitat requirements of tidewater gobies, the Arroyo may serve as potential overwintering habitat for tidewater goby in that it offers protection from main channel flows (based on its location and orientation relative to the main channel) and is bordered by dense vegetation. However, the ability of the Arroyo to support tidewater gobies at other times is likely impaired by direct discharges of storm and municipal runoff that create variable and potentially adverse hydraulic conditions compared to the relatively stable habitats where tidewater gobies are typically found. The water quality in the Arroyo is also likely to be reduced (relative to the San Lorenzo River) by potentially elevated levels of chemicals, nutrients, and other contaminants associated with municipal runoff. Another consideration is human disturbance associated with the homeless encampments adjacent to the channel. Although no sampling data are available, small freshwater tributaries like the Arroyo often support other fish species that are known to prey on tidewater gobies (e.g., centrarchids).

The most significant factor limiting the potential occurrence of tidewater goby in the project area is the presence of a major riffle in the San Lorenzo River approximately 0.5 mile downstream of the Arroyo outlet (just downstream of the Water Street Bridge) (Figure 3c, Photo 6). Under most flow conditions, this riffle likely poses a significant impediment to upstream dispersal of tidewater gobies based on their avoidance of swift currents, poor swimming abilities, and restriction to low-gradient reaches of other streams. This provides a reasonable explanation for the failure to detect tidewater gobies above the Water Street Bridge during past fish sampling efforts. Thus, although the Arroyo is within potential dispersal distance of tidewater gobies from the lagoon, it is unlikely that gobies can disperse as far upstream as the Arroyo.

Conclusion

The potential for tidewater goby to occur in the project area is considered very low. An examination of site conditions in June 2011 indicated that the Arroyo could provide winter refuge habitat for tidewater gobies during high winter flows in the San Lorenzo River. However, tidewater gobies are unlikely to occur in the project area for the following reasons:

- A major riffle on the San Lorenzo River at the Water Street Bridge 0.5 miles downstream of the Arroyo likely precludes upstream movement of tidewater goby beyond this point.
- There is no sampling evidence to suggest that tidewater goby occur above the Water Street Bridge on the San Lorenzo River.
- The Arroyo itself is subject to variable and potentially adverse hydraulic conditions associated with direct discharges of storm and municipal runoff.
- The Arroyo is subject to poor water quality associated with direct discharges of municipal runoff.
- The site is subject to human disturbance associated with homeless encampments adjacent to the Arroyo.

Literature Citations

Moyle, Peter. 2002. Inland Fishes of California. University of California Press. Berkeley and Los Angeles, CA.

U.S. Fish and Wildlife Service. 2005. Recovery Plan for the Tidewater Goby (*Eucyclogobius newberryi*). Portland, Oregon. vi + 199 pp.

U.S. Fish and Wildlife Service. 2007. Tidewater goby (*Eucyclogobius newberryi*) 5-year review: summary and evaluation. U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. September 2007.

Personal Communications

Gary Kittleson. June 1, 2011. Field Visit to the Arroyo de San Pedro Regaldo and a follow up phone conservation regarding potential for tidewater goby to occur in Arroyo de San Pedro Regaldo.

Pereksta, D.M. December 12, 2005. Letter to Gary Ruggerone, Caltrans, regarding construction of the San Lorenzo River Bike/Pedestrian Bridge, Santa Cruz, California (05-SCR-0-SCR).

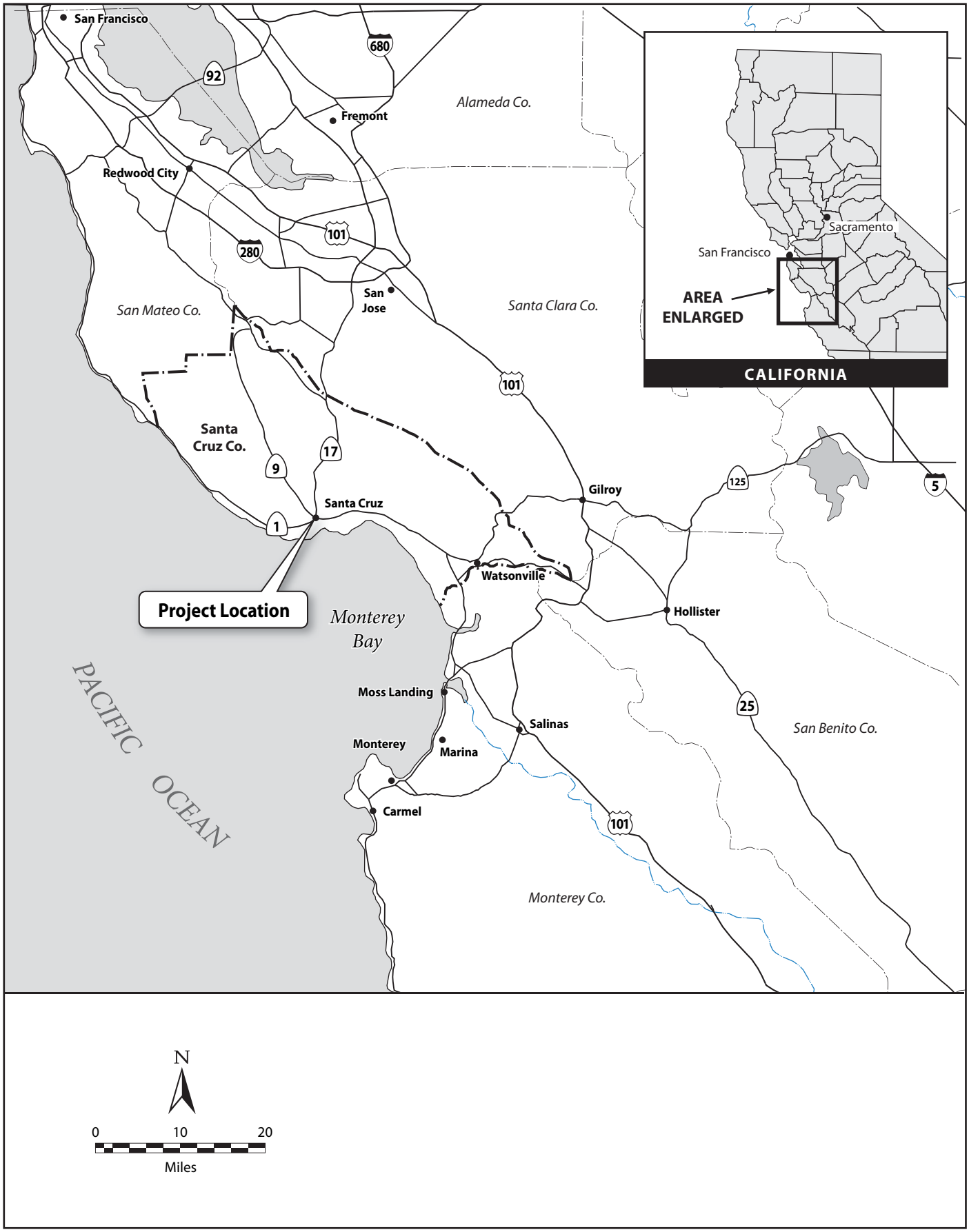


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Figure 1
Regional and Project Location

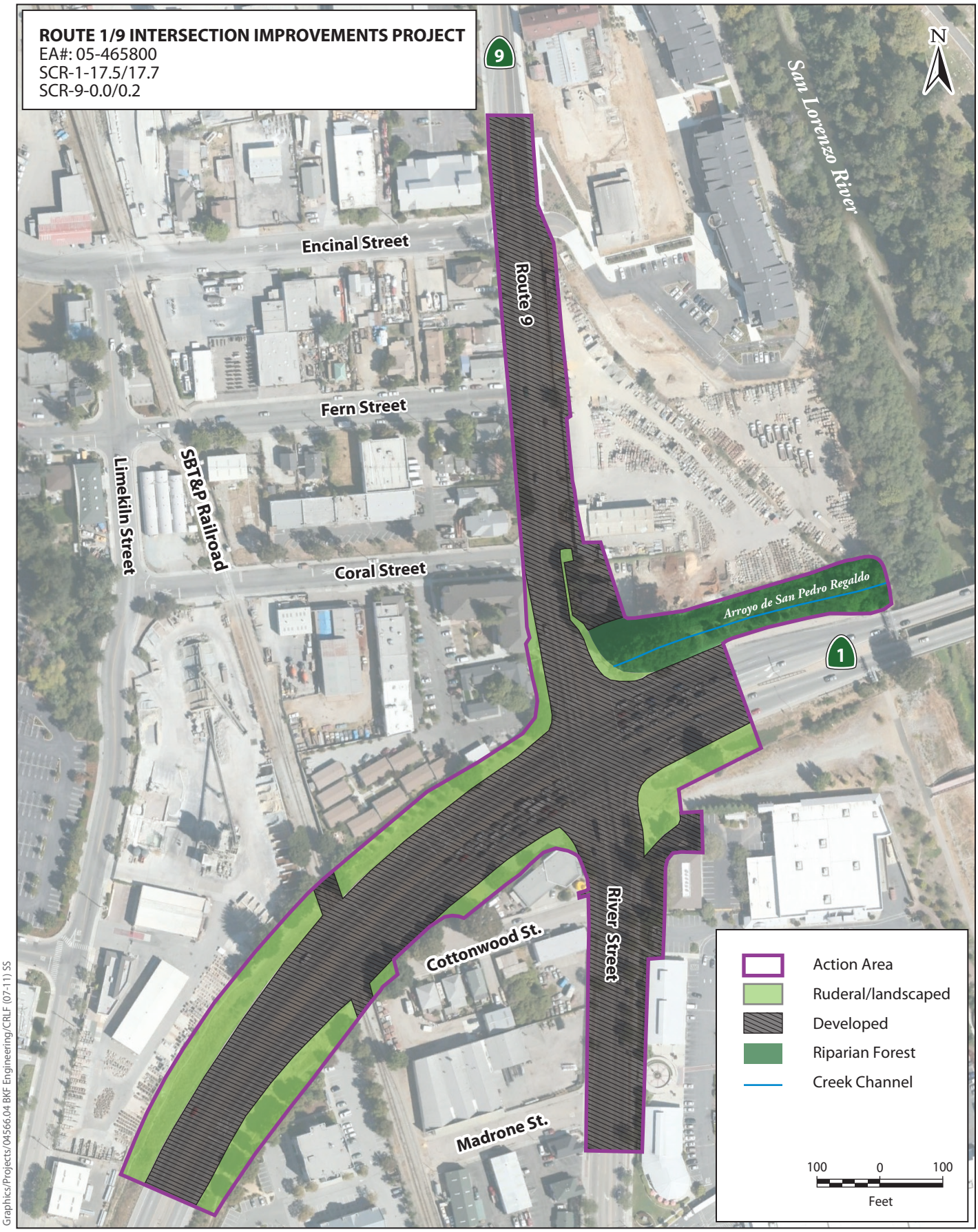

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Figure 2
Natural Communities and Development in the Action Area

Photo 1: The Arroyo de San Pedro Regaldo, looking downstream (east) from the top of the culvert at the Route 1/9 Intersection.

Photo 2: The Arroyo at its confluence with the San Lorenzo River (looking upstream).

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Figure 3a
Representative Photographs
Assessment of Potential Tidewater Goby to Occur in Route 1/9 Project Area

Photo 3: Portion of Arroyo lined with *Typha*.

Photo 4: Culvert and pool at the western edge of the Arroyo.

Graphics/Projects/Graphics/Project_Graphics_2004 Project Graphics\04566.04 BKF Engineering\Tidewater Goby (07-11)\Fig_3_Photos.indd (07/21/11) SS

Figure 3b
Representative Photographs
Assessment of Potential Tidewater Goby to Occur in Route 1/9 Project Area

Photo 5: San Lorenzo River, looking downstream from the confluence with the Arroyo.

Photo 6: Riffle on the San Lorenzo River located approximately 0.5 mile downstream from the Arroyo confluence and just downstream of the Water Street Bridge.

Graphics/Projects/Graphics/Project_Graphics_2004 Project Graphics/04566.04 BKF Engineering/Tidewater Goby (07-11)/Fig_3_Photos.indd (07/21/11) SS

Figure 3c
Representative Photographs
Assessment of Potential Tidewater Goby to Occur in Route 1/9 Project Area

Appendix F Correspondence Related to Central California Coast Coho Salmon and Central California Coast Steelhead and Their Critical Habitat

DEPARTMENT OF TRANSPORTATION
50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
http://www.dot.ca.gov/dist05/

Flex your power!
Be energy efficient!

December 30, 2011

Joe Heublein, Fisheries Biologist
National Marine Fisheries Service
777 Sonoma Avenue
Santa Rosa, CA 95404

Subject: Route 1/Route 9 Intersection Improvement Project, City of Santa Cruz, California

Dear Mr. Heublein:

The California Department of Transportation (Caltrans) and the City of Santa Cruz (City) propose to implement improvements to the intersection at Route 1 and Route 9/River Street (Route 1/9 intersection) in the City of Santa Cruz, Santa Cruz County, California (Figure 1). In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, Caltrans is requesting the National Marine Fisheries Service's (NMFS's) written concurrence with our determination that the Route 1/9 Intersection Improvements Project (proposed action) is not likely to adversely affect the endangered Central California Coast (CCC) coho salmon (*Oncorhynchus kisutch*), threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*), and their designated critical habitat. Caltrans is also requesting NMFS's written concurrence that the proposed action would have minimal effects on essential fish habitat (EFH) in accordance with the consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The basis for these determinations is presented below. This letter includes a description of the proposed action, consultation history, and proposed measures to avoid incidental take of coho salmon and steelhead. This letter report describes the results of recent field surveys and site assessments conducted by ICF International (ICF).

Description of the Proposed Action

The proposed action would improve traffic operations at the existing Route 1/9 intersection by widening the existing intersection to accommodate additional turning vehicle lanes, bicycle lanes, and shoulders. The additional turning lanes would improve the level of service at the intersection and provide safety benefits. The proposed action would be funded with local, State Transportation Improvement Program, and Federal Transportation Improvement Program funds. The limits of the action area are shown in Figure 2.

The proposed improvements, all of which are standard lane and shoulder width dimensions, would require widening the existing roadway. At the northeast corner of the Route 1/9 intersection, an earthen embankment would be constructed to support the roadway widening over the drainage culvert that opens into a stream channel known as Arroyo de San Pedro Regaldo (Arroyo). The Arroyo extends approximately 450 feet from the existing culvert to its outlet with the San Lorenzo River at approximately river mile 2. The embankment would have a 2:1 slope with the toe of the embankment extending approximately 40 feet beyond the existing roadway. The existing culvert would be extended approximately 25 feet. The existing concrete apron and cutoff wall that extend approximately 25 feet from the existing culvert would remain in place or reconstructed "in-kind". All in-water construction activities within the Arroyo would be conducted during the dry season (July 1 through October 15). Dewatering would be accomplished by using small check dams and bypass pipes to isolate all in-channel activities from flowing water and bypass the flow past the construction site.

The proposed action includes the following measures to avoid, minimize, and compensate for effects on sensitive habitat and special-status fish and wildlife species:

- Caltrans/City propose to conduct in-water construction activities during the dry season (July 1-October 15) to avoid the primary migration seasons of adult and juvenile salmonids and minimize the

potential for adverse effects on water quality and aquatic habitat in the San Lorenzo River resulting from temporary increases in suspended sediment and turbidity.

- Caltrans/City will require the contractor to construct a temporary cofferdam to isolate in-channel construction activities from the stream. The cofferdam will be constructed of clean imported gravel, impermeable liners (e.g., plastic), water bladders, and/or sand bags, and used in conjunction with a bypass pipe (large enough to accommodate the entire flow) to isolate the construction area from the stream and bypass the flow around the construction area to the channel below.
- During dewatering operations, water will be pumped out of the isolated construction area to water storage containers or a temporary detention or filtration basin away from the stream channel to prevent direct discharge of this water to the creek. All gravel, sand bags, liners, pipes, concrete debris, and other materials will be removed from the channel before stream flow is restored to the dewatered area.
- Caltrans/the City will prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Plan (WPCP) in accordance with Caltrans' *Stormwater Pollution Prevention Plan and Water Pollution Control Program Preparation Manual*. The SWPPP and WPCP will include all applicable erosion control, slope stabilization, and spill prevention and control BMPs to avoid or minimize potential adverse effects on water quality and aquatic habitat. All erosion control and slope stabilization measures will be in place by October 15 and monitored and maintained in accordance with the SWPPP and WPCP.
- Caltrans/City will avoid, minimize, and compensate for impacts to riparian vegetation by avoiding native trees and shrubs to the extent practicable and compensating for temporary disturbance (0.04 acre) and permanent losses (0.03 acre) of riparian vegetation. Caltrans/the City will prepare and implement a mitigation planting plan, which will include a 3-year monitoring and maintenance plan.
- Caltrans/City will restore temporarily disturbed portions of the stream channel immediately downstream of the culvert (0.01 acre[1]) to original grade and pre-construction conditions following construction. Permanent losses of stream habitat (0.01 acre[1]) will be compensated by implementing one or a combination of the following options: 1) purchasing mitigation credits for stream/riparian habitat at a locally approved mitigation bank or 2) implementing compensatory riparian mitigation in addition to the acreage restored for loss of riparian habitat.

Detailed descriptions of these and other avoidance, minimization, and compensation measures can be found in the project's Natural Environment Study submitted to Caltrans in July 2011.

Species and Habitat in Action Area

Central California Coast Steelhead

The CCC steelhead distinct population segment (DPS) was listed as threatened by NMFS on August 18, 1997 (62 FR 43938). On January 5, 2006, NMFS issued a final listing determination reaffirming the threatened status of CCC steelhead (71 FR 834). CCC steelhead includes populations in coastal California streams from the Russian River to Aptos Creek, and several tributaries of San Francisco, San Pablo, and Suisun Bays. NMFS issued a final rule designating critical habitat for CCC steelhead on September 2, 2005 (70 FR 52488). Critical habitat includes the San Lorenzo River within the study area.

The San Lorenzo River in the action area is a migration corridor for adult and juvenile salmonids between November and June. Within the study area, the abundance of sand and high winter flows create poor spawning conditions. Juvenile steelhead use the lagoon and lower river for summer rearing although the quality of the habitat is low, especially in drought years. In the main channel, sand limits the extent and depth of pools and the abundance of aquatic insects, reducing the value of this area for summer rearing of steelhead (John Gilchrist & Associates 2003).

[1] Impact acreages include the stream channel and banks up to the ordinary high water mark.

Fish sampling in fall 2000 detected relatively low densities of juvenile steelhead (4.5 fish per 100 feet of stream) between the Route 1 bridge and the Water Street bridge (John Gilchrist & Associates 2003).
Based on a review of existing habitat and population data, Alley et al. (2004) concluded that sedimentation due to excessive erosion of fine sediment from the watershed, low summer streamflows (especially in drought years), and adult passage impediments were major limiting factors for salmonid production in the San Lorenzo River. High water temperature was also identified as a limiting factor in the lower San Lorenzo River. The primary limiting factor for smolts moving downstream from rearing habitat to the ocean is dewatering of the stream channel resulting in very shallow riffles or dry sections, which create physical barriers to migration. Upstream diversions exacerbate these conditions, especially in drought years. These conditions also can create unsuitable conditions for juvenile rearing in the lower river and lagoon through the spring and summer. However, in wetter years, higher streamflows may provide suitable conditions for juvenile rearing and migration into June, and allow some juveniles to rear in the lower river and lagoon through the summer.

Central California Coast Coho Salmon

The CCC coho salmon Evolutionarily Significant Unit (ESU) was formerly listed as threatened by NMFS on October 31, 1996, and was listed as endangered on June 28, 2005 (70FR37160). CCC coho salmon also are listed as endangered under the California Endangered Species Act (CESA). The CCC coho salmon ESU includes populations from Punta Gorda in Humboldt County to and including the San Lorenzo River in Santa Cruz County, as well as populations in tributaries to San Francisco Bay (excluding the Sacramento-San Joaquin River system). Critical habitat for coho salmon was designated by NMFS on May 5, 1999 (64 FR 24049) and includes the San Lorenzo River within the study area.
Most natural populations of coho salmon in streams south of San Francisco Bay have been extirpated. Since the 1976-1977 drought, the only known naturally spawning coho populations are in San Vicente, Gazos, Waddell, and Scott Creeks (Circuit Rider Productions, Inc. and NOAA Coastal Services Center 2004). In the San Lorenzo River at Felton Diversion Dam, available records indicate that 174 adult coho were trapped in 1976-1977 and 77 were trapped in 1979–1980. In fall 1981, juvenile coho were found only in Bean and Fall Creek sites out of 32 sites sampled in the San Lorenzo River watershed (Smith 1982, as cited by Alley et al. 2004). No coho have been captured in recent years (1994–2002) (Alley 1995–2002 and H.T. Harvey 2003, as cited by Alley et al. 2004), and it is currently believed that they have been extirpated from the San Lorenzo River. Conditions in the San Lorenzo watershed that hinder the recovery of coho salmon include difficult adult passage conditions in the upper watershed, excessive sedimentation of spawning habitat, removal of woody material from the stream, water diversions, and warm water temperatures in the lower gradient reaches that coho prefer (Alley et al. 2004).

Consultation History

ICF biologists reviewed existing information and conducted field surveys in 2005, 2007, 2010, and 2011 to identify biological communities and sensitive species that could be present in the action area. These surveys included a recent survey (November 2010) by ICF wildlife biologist Jennifer Haire to update the site assessment for California red-legged frog (CRLF) and a site visit conducted by fisheries biologists Rebecca Sloan (ICF), Donna Maniscalco (ICF), and Gary Kittleson (Kittleson Environmental Consulting) on June 1, 2011 to document site conditions and determine the potential for tidewater gobies to occur in the action area.
On March 29, 2011, ICF fisheries biologist Bill Mitchell spoke to Joe Heublein, NMFS, regarding the proposed project and potential for adverse effects on listed coho salmon and steelhead and their designated critical habitat. Based on the proposed location, timing, magnitude, and duration of project effects and low likelihood of summer rearing of juvenile steelhead in the Arroyo, Mr. Heublein indicated that a “not likely to adversely affect” determination would be warranted with the implementation of several measures to avoid or minimize the potential for adverse water quality effects in the San Lorenzo River. Those measures, described above, have been incorporated into the project description.

Conclusion

With implementation of the proposed minimization and avoidance measures, Caltrans concludes that any effects of the proposed action to CCC coho salmon, CCC steelhead, or their critical habitat would be insignificant and limited to temporary, minor increases in suspended sediment and turbidity in the San Lorenzo River in the vicinity of the Arroyo. Accordingly, the proposed action would also result in no more than minimal effects to EFH. Therefore, Caltrans concludes that the Route 1/9 intersection project is not likely to adversely affect CCC coho salmon, CCC steelhead, their critical habitat, or EFH.

Please direct your response and any questions regarding this letter to Jim Walth, Caltrans District 5 biologist, at (805) 542-4657.

Sincerely,

Jim Walth
Associate Biologist
Central Coast Environmental Management Branch

Attachments (2)

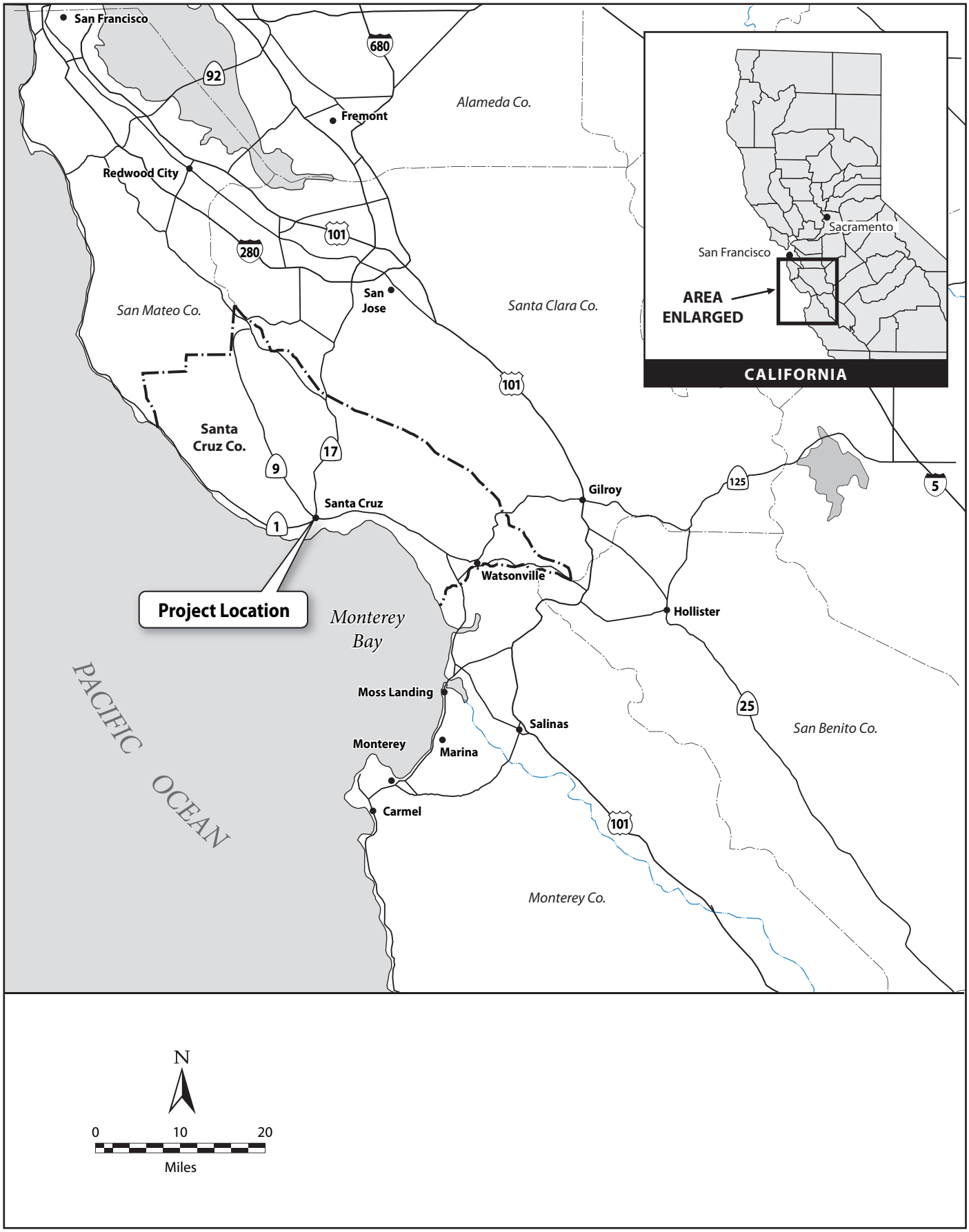

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Figure 1
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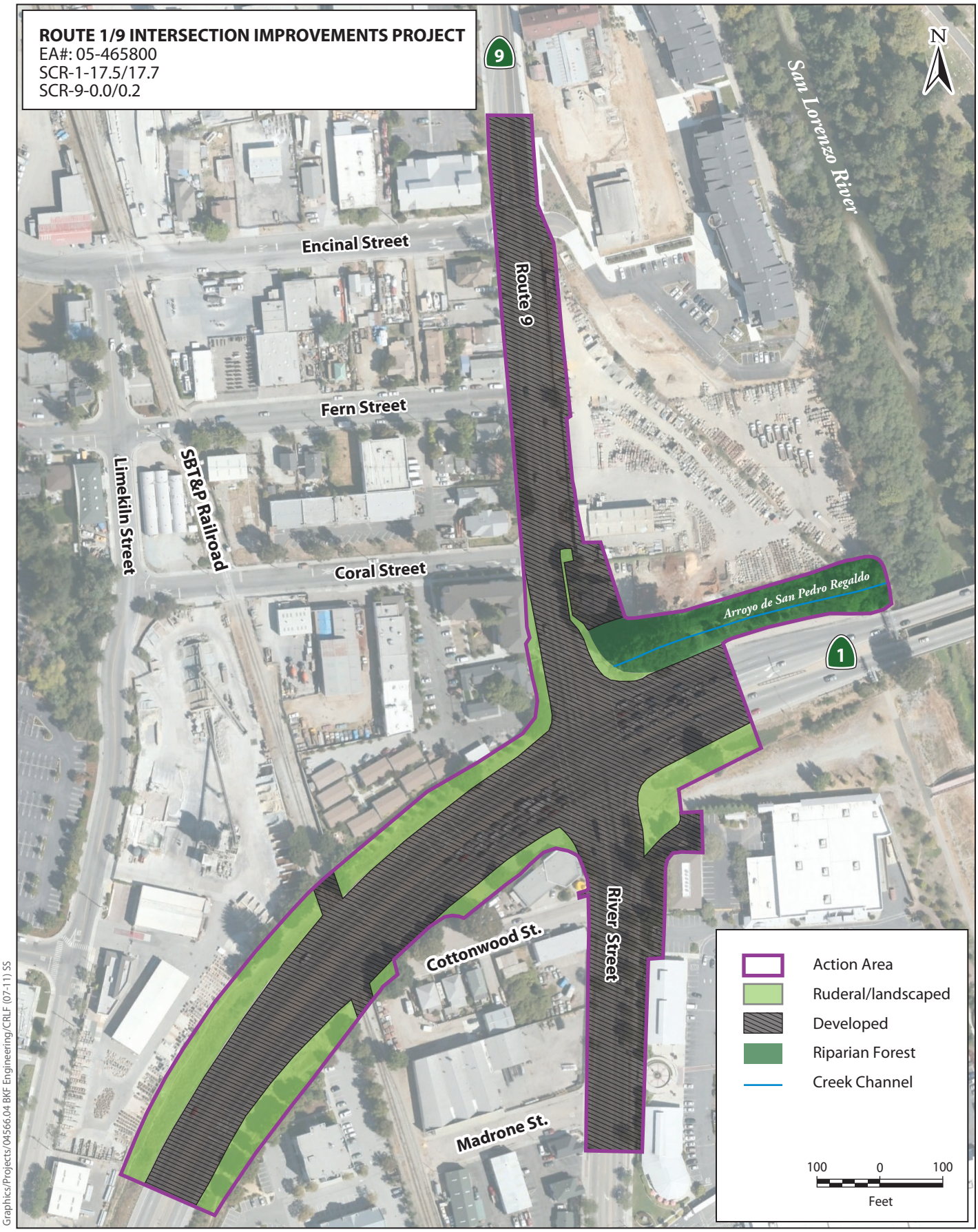

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Figure 2
Natural Communities and Development in the Action Area