Appendix H Biological Coordination

Two Biological Opinions and one Department of Army Corp's of Engineers Jurisdictional Determination are included in this appendix.

- A Biological Opinion for Tidewater Goby was issued by the U.S. Fish and Wildlife Service for the proposed project on August 6, 2012. The document is included in its entirety.

  Provided first is a letter issued by U.S. Fish and Wildlife Service on August 26, 2013 related to proposed revised critical habitat for endangered tidewater goby.

- A Biological Opinion for steelhead trout (Southern California Distinct Population Segment) was issued by the NOAA National Marine Fisheries Service for the proposed project on September 30, 2013. The document is included in its entirety.

- An approved Jurisdictional Determination by the Department of Army Corp's of Engineers for the South Coast 101 HOV Project was submitted to Caltrans on August 29, 2012. This determination was to confirm there are jurisdictional waters of the United States as well as non-jurisdictional aquatic resources on the project site.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

In Reply Refer To:
08EVEN00-2013-F-0355

August 26, 2013

Morgan Robertson,
Associate Environmental Planner-Biologist
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401

Subject: Confirmation of the Biological and Conference Opinions for the South Coast 101 HOV Project, Santa Barbara County, California (File Number 08EVEN00-2013-F-0355) (8-8-12-F-13)

Dear Ms. Robertson:

This letter is in response to your request, dated July 22, 2013, for confirmation of the conference portion of the biological and conference opinion 8-8-12-F-13 as a biological opinion. The conference opinion addressed the effects of the proposed South Coast 101 High Occupancy Vehicle (HOV) project in Santa Barbara County, California on the proposed revised critical habitat for the endangered tidewater goby (*Eucyclogobius newberryi*). Confirmation is needed because revised critical habitat for the tidewater goby was designated on February 6, 2013.

We do not anticipate any effects of the proposed action on the revised critical habitat for tidewater goby beyond those analyzed in the biological and conference opinion. Consequently, the Service hereby confirms the conference opinion as a biological opinion.

If you have any questions, please contact Mark A. Elvin of my staff at (805) 644-1766, extension 258.

Sincerely,

Roger P. Root
Acting Field Supervisor

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2012-F-0174

August 6, 2012

Morgan Robertson
Associate Environmental Planner-Biologist
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401

Subject: Biological and Conference Opinion for the South Coast 101 High Occupancy Vehicle Project, Santa Barbara County, California (8-8-12-F-13)

Dear Ms. Robertson:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological and conference opinion based on our review of the proposed South Coast 101 High Occupancy Vehicle (HOV) project in Santa Barbara County, California. The California Department of Transportation (Caltrans) proposes to add a single HOV lane in both the northbound and southbound directions and reconstruct interchanges at Sheffield Drive and Cabrillo Boulevard along an approximate 11-mile section of State Route 101 between the city of Carpinteria and the city of Santa Barbara, in Santa Barbara County, California. At issue are the effects of the proposed actions on the federally endangered tidewater goby (*Eucyclogobius newberryi*). This document also transmits our conference opinion on proposed critical habitat for the tidewater goby. Your request for formal consultation was dated February 1, 2012, and your request for conference on the proposed revised critical habitat for the tidewater goby was on March 20, 2012 (Robertson 2012a). This biological and conference opinion is issued in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act).

Caltrans has assumed the Federal Highway Administration's (FHWA) authority and responsibility for compliance with the National Environmental Policy Act and other environmental laws. A memorandum of understanding between the FHWA and Caltrans allows Caltrans to serve as the Federal lead agency for formal consultation on the proposed project (U.S. Department of Transportation 2007).

This biological and conference opinion was prepared using information provided in your request for consultation, your biological assessment (Caltrans 2012), various communications between Caltrans and the Service, and information in our files. A complete record of this consultation can be made available at the Ventura Fish and Wildlife Office.

CONSULTATION HISTORY

The proposed project is within the historical distributions of the federally endangered Gambel's watercress (*Rorippa gambellii* [=*Nasturtium gambelii*]), marsh sandwort (*Arenaria paludicola*), and the federally threatened California red-legged frog (*Rana draytonii*), and suitable habitat occurs within the project area for these species. Caltrans conducted surveys for these species, but none were observed (Caltrans 2012). Caltrans made a "no effect" determination for Gambel's watercress, marsh sandwort, and California red-legged frog for this proposed project. To ensure that no effect to listed species occurs, Caltrans has proposed to conduct pre-construction surveys for sensitive species, including focused surveys for Gambel's watercress and marsh sandwort by botanists with expertise with them (Robertson 2012b) to confirm no listed species are present in the area to be impacted.

BIOLOGICAL AND CONFERENCE OPINIONS

DESCRIPTION OF THE PROPOSED ACTION

Caltrans proposes to widen State Route 101 to three lanes in each direction between 0.22 mile south of the Bailard Avenue overcrossing in the City of Carpinteria and Sycamore Creek in the City of Santa Barbara (Figure 1). A single HOV lane would be added in both the northbound and southbound directions. Interchanges would be reconstructed at Sheffield Drive and Cabrillo Boulevard and bridges would be replaced at Arroyo Parida [Arroyo Paredon], Toro Canyon, Romero (Picay), Oak, and San Ysidro Creeks and widened at Franklin and Santa Monica Creeks. Other various bridge structures and interchanges, not crossing drainages, would be replaced, modified, or widened. Work would be confined primarily to the existing Highway Right-of Way (ROW) as it travels through the urban environments in the cities of Santa Barbara, Montecito, Summerland and Carpinteria. Caltrans anticipates that the entire project would occur within a 269-acre area and that construction activities would begin between 2015 and 2017.

General Design Features
The proposed project would include the following actions:

- Add an additional lane in each direction on Route 101 to provide for a part time, continuous access HOV facility within the project limits.
- Replace bridge structures at: Arroyo Parida, Toro Canyon, Romero, Oak, and San Ysidro Creeks.
- Remove the channel lining at Arroyo Parida Bridge along Highway 101.
- Widen bridge structures at Franklin and Santa Monica Creeks.
- Widen traffic undercrossing structures at South Padaro Lane and Evans Avenue.
- Construct a southbound auxiliary lane between the Sheffield Drive on ramp and the Evans Avenue off ramp.
- Reconstruct the interchanges at Sheffield Drive and Cabrillo Boulevard.

- Construct retaining walls at two locations: On the southbound outside shoulder at the right of way line along the southbound off ramp at Sheffield Drive (430 feet in length) and on the outside shoulder of the proposed southbound auxiliary lane from Sheffield Drive to Evans Avenue (1,550 feet in length).
- Provide median landscaping in the first 0.2 mile at the southern limits of the project, and the last 0.5 mile of the project.
- Install replacement planting.
- Construct soundwalls for noise abatement where appropriate.
- Provide noise attenuating pavement surface on all travel lanes.
- Relocate underground and aboveground utilities as needed.
- Lengthen cross culverts to accommodate additional pavement width.
- Construct maintenance vehicle pullout areas.
- Construct stormwater treatment facilities within the project limits and on publicly owned property near the Bailard Interchange (Post Mark (PM) 1.6).

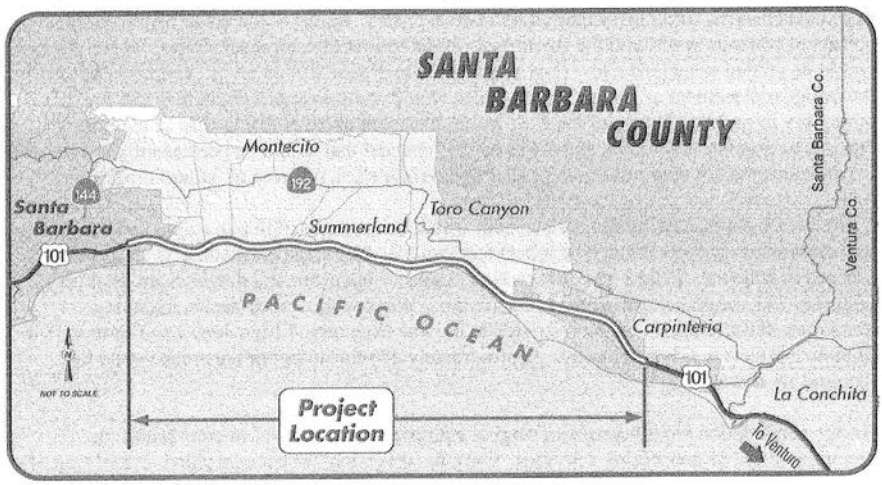

Figure 1. Project Location Map (Caltrans 2012)

Fencing would be installed throughout the project area to clearly define project limits and protect sensitive areas within the project to limit construction activities and protect habitats of concern, including riparian habitat. This fencing would be delineated on the project plans and established in the field prior to beginning any construction activities.

Proposed Project Schedule
The proposed project is expected to be implemented in four phases due to funding limitations. Construction activities on the first phase are expected to begin between 2015 and 2017, based on funding availability. Work in the Arroyo Parida Creek channel would occur between June 1 and October 31 to minimize potential impacts to migrating steelhead trout (*Oncorhynchus mykiss*) and tidewater goby. Tree removal throughout the project would occur between September 1 and February 15 to avoid impacts to nesting birds.

Proposed Work in Arroyo Parida Creek
Caltrans is proposing to replace the existing parallel Arroyo Parida Creek bridges with a single two-span structure that would accommodate three lanes of traffic in each direction and remove the channel lining at this bridge along Highway 101. The new bridge structure would be approximately 80 feet long and 173 feet wide, with a span approximately twice as long as the existing bridges to meet 25-year flood flow requirements. Underneath the bridge structure, the natural bottom creek channel would be widened by 40 feet. The wider bridge deck over the expanded channel would be supported by instream piers. Banks of the creek would continue to consist of concrete walls, and the streambed would consist of natural substrates. The creek bed would be graded to include a low flow channel per hydraulic design plans. Caltrans expects that the bridge replacement at Arroyo Parida Creek would result in approximately 0.156 acre of temporary impacts to Waters of the U.S. within the creek channel, 0.035 acre of temporary impacts to riparian vegetation, and 0.013 acre of channel that would be permanently shaded. The expanded channel would result in a gain of approximately 0.160 acre of natural creek bed.

Caltrans expects that the bridge replacement would be constructed in two stages and would take up to two seasons (June through October) to complete. The staging sequence is expected to proceed as follows: Stage 1 - middle section; Stage 2 - upstream and downstream sections. Highway 101 would be open during construction. Work within creek banks, including temporary dewatering, would be restricted to the low flow period from June 1 to October 31 to minimize effects to tidewater goby. Approximately 250 linear feet of the creek would be temporarily dewatered.

Bridge construction would consist of staging equipment and material in preparation for commencement of dewatering activities. Once the diversion has been installed, demolition of a portion of the structure would begin using an excavator with a hydraulic breaker. After the demolished portion of the existing structures is removed, construction of the pier and abutments would begin, which would include excavating the banks below the level of the streambed. Following this, construction of the bridge deck that includes falsework and pouring of concrete would begin. Upon completion of each stage, all construction debris would be removed from the channel. Disturbed areas would be stabilized using appropriate Best Management Practices

(BMPs) according to Caltrans' BMP Manual (Caltrans 2003) and the water diversion would be removed.

Avoidance and Minimization Measures

- Construction within Arroyo Parida Creek will be restricted to the low flow period between June 1st and October 31st to avoid the migration period for adult steelhead and to minimize impacts to tidewater goby.
- Only qualified personnel authorized under the Biological Opinion shall participate in activities associated with surveys, capture, handling, and relocation of tidewater goby. The names and credentials of personnel who desire to conduct these activities shall be supplied to the Service for their review and approval at least 30 days prior to the onset of these activities. The Service-approved biologist will monitor the area of direct impact (ADI) during all phases of construction that have the potential to affect tidewater goby and proposed critical habitat.
- Prior to construction activities, the project area will be surveyed for the presence of special-status species, including tidewater goby and steelhead because: 1) Caltrans does not anticipate construction to begin until between 2015 and 2017, and 2) tidewater goby and other species can occur in different areas over stretches of time like this. Additional surveys will be conducted up and downstream from the ADI in order to identify appropriate habitat for temporary fish relocation. Fish barriers will be installed temporarily and individuals present inside the ADI will be relocated within the creek by a Service-approved fisheries biologist, as authorized under a Biological Opinion. The names and credentials of personnel requested to conduct these activities shall be supplied to staff at the Ventura Office of the U.S. Fish and Wildlife Service for review and approval at least 30 day prior to the onset of these activities.
- To minimize potential disturbance during construction, the limits of work in creek areas will be delineated on project plans and marked in the field with ESA fencing. ESA fencing will be installed throughout areas of the project to delineate construction boundaries and protect sensitive habitats.
- No work will be performed in a wetted stream channel. A water diversion will be installed at the beginning of the construction window (June 1) or after and prior to any work in the creek. It will remain in place until October 31 or when construction in the creek is finished for the season. The water in Arroyo Parida Creek will be diverted using a corrugated pipe during construction activities. If water is to be pumped around work sites, pump intakes will be completely screened with wire mesh not larger than 0.08 inch to prevent tidewater gobies from entering the pump system.
- During the dewatering effort, if present, tidewater goby shall be removed prior to draining the site. After barriers are constructed, tidewater goby shall be captured, transported in buckets, and released in the most appropriate habitat immediately adjacent to the de-watered area. Tidewater goby shall be captured using dip nets and other appropriate tools and moved. Handling time for tidewater goby shall be minimized to the maximum extent practicable. Detailed records of tidewater goby handled will be kept

and reported to the Service. All debris and aquatic and emergent vegetation in the pumped area shall be carefully inspected. As the work site is dewatered, remaining pools shall be inspected for tidewater goby. If water is to be pumped around work sites, intakes shall be completely screened with wire mesh not larger than 0.08 inch to prevent tidewater goby from entering the pump system.

- All project personnel will receive environmental training that will include tidewater goby identification and natural history, protective measures, and reporting.
- Effects to downstream habitat will be avoided with the use of erosion and sedimentation Best Management Practices (BMPs) according to Caltrans' National Pollutant Discharge Elimination System (NPDES) permit (State Water Resources Control Board 1999) and Caltrans standards according to their Best Management Practices Manual (Caltrans 2003) to reduce downstream transport of construction generated particulates.
- Non-native vegetation will be removed from the ADI. Removal of existing stands of giant reed (*Arrundo donax*) on the southeast banks of Arroyo Parida Creek will be included in Caltrans landscape plans. Revegetation will be accomplished with the use of locally native species upon completion of bridge construction.
- Impacts to native riparian vegetation would be offset by replacement planting within the project limits. Replacement planting will be achieved using a 3:1 ratio for willows, coast live oaks, and western sycamores. Disturbed areas that are not replanted with riparian trees or shrubs would be stabilized and seeded with native grasses and forbs (Caltrans 2011).
- Temporary effects to water quality will be minimized by implementing the best management practices (BMPs) from Caltrans National Pollutant Discharge Elimination System statewide storm water permit (Caltrans 2003) and Caltrans anticipates that it will not use chemical herbicides (Robertson 2012c).
- Silt fence and fiber rolls will be used and to prevent excavated material and loose soil from reaching the stream. Erosion control measures will be applied where the soil surface is disturbed to control runoff and to assure that disturbed slopes do not erode.
- All disturbance to riparian vegetation and jurisdictional waters will be minimized with the use of ESA fencing. Riparian areas that are disturbed as a result of project construction shall be revegetated using native hydroseeding or live planting methods.
- Equipment storage will be located in upland areas. No equipment will be fueled or serviced within 50 feet of riparian or wetland areas.
- Replanting plans for creek locations will be reviewed by Santa Barbara County Flood Control to ensure that plantings would not impede flows within creek channels to avoid flooding. All riparian plantings would be monitored for 3 years to ensure that successful revegetation has occurred.
- Temporarily impacted portions of the creek are anticipated to recover to pre-project conditions with implementation of replanting and other measures included in this document. The new bridge structure would result in a wider creek channel at Arroyo

Parida Creek resulting in additional potential habitat for tidewater goby. Caltrans determined that this project may have a net beneficial effect at this location through improved quality of habitat through revegetation efforts and the expansion of the channel in the state ROW.

- Upon completion of construction activities each year, barriers to flow shall be removed in a manner that will allow flow to resume with the least disturbance to the substrate. If the substrate of the stream is altered during work activities, it shall be graded or otherwise restored to pre-construction conditions, or better, after the work is completed.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

The jeopardy analysis in these biological and conference opinions rely on four components: (1) the *Status of the Species*, which describes the range-wide condition of the tidewater goby the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the tidewater goby in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the tidewater goby; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the tidewater goby; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the tidewater goby.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the current status of the tidewater goby, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the tidewater goby in the wild.

Adverse Modification Determination

These biological and conference opinions do not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied on the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in these biological and conference opinions rely on four components: (1) the *Status of Critical Habitat*, which describes the range-wide condition of proposed revised critical habitat for the tidewater goby in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the *Environmental Baseline*, which analyzes the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the PCEs and how that will influence the recovery role of the affected critical habitat units; and (4) *Cumulative Effects*, which

evaluates the effects of future non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed federal action on the proposed revised critical habitat for the tidewater goby are evaluated in the context of the range-wide condition of the proposed revised critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the PCE to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the tidewater goby.

STATUS OF THE SPECIES

Tidewater Goby

The tidewater goby was listed as endangered on March 7, 1994 (59 FR 5494). On June 24, 1999, the Service proposed to remove the populations occurring north of Orange County, California, from the endangered species list (64 FR 33816). In November 2002, the Service withdrew this proposed delisting rule and determined it appropriate to retain the tidewater goby's listing as endangered throughout its range (67 FR 67803). We originally designated critical habitat for the tidewater goby on November 20, 2000 (65 FR 69693); however, in January 2008, we revised the designated critical habitat (71 FR 68914). We proposed a revised critical habitat designation for tidewater goby on October 19, 2011 (76 FR 64996). Critical habitat is designated and revised critical habitat is proposed in Santa Barbara County. Critical habitat is not designated within action area, but revised critical habitat is proposed within the project area in Arroyo Parida Creek. A recovery plan for the tidewater goby was completed on December 12, 2005 (Service 2005). A 5-Year Review for the tidewater goby was completed in September 2007 (Service 2007). Unless otherwise noted, information in the following species account is summarized from the following sources: Wang (1982), Irwin and Soltz (1984), Lafferty et al. (1999a, 1999b), Swift et al. (1989, 1993, 1997), Worcester (1992), Swenson (1995, 1999), and Swenson and McCray (1996).

The tidewater goby is endemic to California and typically inhabits coastal lagoons, estuaries, and marshes, preferring relatively low salinities of approximately 12 parts per thousand (ppt). Tidewater goby habitat is characterized by brackish estuaries, lagoons, and lower stream reaches where the water is fairly still but not stagnant. They tend to be found in the upstream portions of lagoons. Tidewater gobies can withstand a range of habitat conditions and have been documented in waters with salinity levels that range from 0 to 42 ppt, temperatures from 46 to 77 degrees Fahrenheit, and depths from approximately 10 inches to 6.5 feet.

The tidewater goby is primarily an annual species in central and southern California, although some variation in life history has been observed. If reproductive output during a single season fails, few (if any) tidewater gobies survive into the next year. Reproduction typically peaks from late April or May to July and can continue into November or December depending on the seasonal temperature and amount of rainfall. Males begin the breeding ritual by digging burrows (3 to 4 inches deep) in clean, coarse sand of open areas. Females then deposit eggs into the

burrows, averaging 400 eggs per spawning effort. Males remain in the burrows to guard the eggs. They frequently forego feeding, which may contribute to the mid-summer mortality observed in some populations. Within 9 to 10 days, larvae emerge and are approximately 0.20 to 0.27 inch in length. Tidewater gobies live in vegetated areas in the lagoon until they are 0.60 to 0.70 inch long. When they reach this life stage, they become substrate-oriented, spending the majority of time on the bottom rather than in the water column. Both males and females can breed more than once in a season, with a lifetime reproductive potential of 3 to 12 spawning events.

Tidewater gobies feed on small invertebrates, including mysids, amphipods, ostracods, snails, aquatic insect larvae, and particularly chironomid larvae. Tidewater gobies of less than 0.30 inch in length probably feed on unicellular phytoplankton or zooplankton, similar to many other early stage larval fishes.

Historically, the tidewater goby occurred in at least 135 California coastal lagoons and estuaries from Tillas Slough near the Oregon border south to Agua Hedionda Lagoon in northern San Diego County. The southern extent of its distribution has been reduced by approximately 8 miles. The species is currently known to occur in about 112 locations, although the number of sites fluctuates with climatic conditions. Currently, the most stable populations are in lagoons and estuaries of intermediate size (5 to 124 acres) that are relatively unaffected by human activities. Six regional clades based on morphological differences (Ahnelt et. al. 2004) that are supported by genetic work done by Dawson et al. (2001) have been used to define recovery units for the tidewater goby (Service 2005). The recovery plan describes 26 recovery sub-units for the tidewater goby (Service 2005).

Tidewater gobies enter the marine environment when sandbars are breached during storm events. The species' tolerance of high salinities (up to 60 ppt) for short periods of time enables it to withstand marine environment conditions where salinities are approximately 35 ppt, thereby allowing the species to re-establish or colonize lagoons and estuaries following flood events. However, genetic studies indicate that individual populations rarely have contact with other populations so natural recolonization may be rare. In Santa Barbara County during the fall of 1994, tidewater gobies were reported as common in the Santa Ynez River 4 miles upstream from the lagoon ; however, by January 1995, they were absent at the upstream sites. Tidewater gobies that are found upstream of lagoons in summer and fall tend to be juveniles. The highest densities of tidewater gobies are typically present in the fall. Vegetation is critical for over-wintering tidewater gobies because it provides refuge from high water flows.

Native predators are not known to be important regulators of tidewater goby population size in the lagoons of southern California. Rather, population declines are attributed to environmental conditions. During high flows, streams flood and breach lagoon barriers creating strong tidal conditions. As a result, tidewater goby populations plummet. Populations typically recover quickly in summer, with recorded mean densities of 54 to 323 fish per square foot. Tidewater goby densities are greatest among emergent and submerged vegetation (Moyle 2002).

The decline of the tidewater goby is attributed primarily to habitat loss or degradation resulting from urban, agricultural, and industrial development in and around coastal wetlands. Some extirpations are believed to be related to pollution, upstream water diversions, and the introduction of non-native predatory fish species, most notably, centrarchid sunfish (*Lepomis* spp.) and bass (*Micropterus* spp.). These threats continue to affect some of the remaining populations of tidewater gobies.

Proposed Revised Critical Habitat for the Tidewater Goby
The proposed revised critical habitat designation for the tidewater goby encompasses approximately 12,157 acres (76 FR 64996). In the proposed revised critical habitat rule, we proposed to designate critical habitat in 65 units in Del Norte, Humboldt, Mendocino, Sonoma, Marin, San Mateo, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties, California. The currently designated revised critical habitat designation for the tidewater goby encompasses approximately 10,003 acres (71 FR 68914). In the current designated rule, critical habitat is designated in in Del Norte, Humboldt, Mendocino, Sonoma, Marin, San Mateo, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Ventura, and Los Angeles Counties, California. Portions of the proposed project occur within the boundaries of proposed revised critical habitat Unit SB-12, Arroyo Paredon.

The proposed revised designation is designed for the conservation of areas supporting the PCE that exists at coastal lagoons, estuaries, backwater marshes, and associated freshwater tributaries, and that are necessary to support the life history functions, of the tidewater goby.

All of the areas of proposed revised critical habitat for the tidewater goby are within the species' historical geographic range and contain the PCE to support at least one of the tidewater goby's essential life history functions. Based on our current knowledge of the life history, biology, and ecology of the tidewater goby and the requirements of the habitat to sustain the essential life history functions of this species, we have determined that the PCE for the tidewater goby consists of: (1) persistent, shallow (in the range of approximately 0.3 to 6.6 feet), still-to-slow-moving, lagoons, estuaries, and coastal streams ranging in salinity from 0.5 ppt to about 12 ppt, which provides adequate space for normal behavior and individual and population growth that contain: (a) Substrates (e.g., sand, silt, mud) suitable for the construction of burrows for reproduction; (b) Submerged and emergent aquatic vegetation, such as *Potamogeton pectinatus*, *Ruppia maritima*, *Typha latifolia*, and *Scirpus* spp., that provides protection from predators and high flow events; or (c) Presence of a sandbar(s) across the mouth of a lagoon or estuary during the late spring, summer, and fall that closes or partially closes the lagoon or estuary, thereby providing relatively stable water levels and salinity.

Recovery Plan for the Tidewater Goby
The 2005 final recovery plan for the tidewater goby states that the goal of recovery efforts is the reclassification of the species from endangered to threatened and, ultimately, delisting of the species. The recovery plan states that reclassification to threatened status may be considered when: 1) specific threats to each metapopulation, such as habitat destruction and alteration (e.g., coastal development, upstream diversion, channelization of rivers and streams, discharge of

agriculture and sewage effluents), introduced predators (e.g., centrarchid fishes), and competition with introduced species (e.g., yellowfin and chameleon gobies), have been addressed through the development and implementation of individual management plans that cumulatively cover the full range of the species; and 2) a metapopulation viability analysis based on scientifically credible monitoring over a 10-year period indicates that each Recovery Unit is viable. The target for downlisting is for individual Sub-Units within each Recovery Unit to have a 75 percent or better chance of persistence for a minimum of 100 years. Specifically, the target is for at least 5 Sub-Units in the North Coast Unit, 8 Sub-Units in the Greater Bay Unit, 3 Sub-Units in the Central Coast Unit, 3 Sub-Units in the Conception Unit, 1 Sub-Unit in the Los Angeles/Ventura Unit, and 2 Sub-Units in the South Coast Unit to individually have a 75 percent chance of persisting for 100 years.

The recovery plan states that delisting of the tidewater goby may be considered when: 1) downlisting criteria have been met; and 2) a metapopulation viability analysis projects that all recovery units are viable, as in the downlisting criterion except that the target for Sub-Units is a 95 percent probability of persistence for 100 years.

5-year Review for the Tidewater Goby

The 5-year review for the tidewater goby states that the recovery plan reflects up-to-date information; however, the 5-year review reconsiders the downlisting and delisting criteria in the recovery plan. The 5-year review states that other, currently available information on the species may also be used to determine the appropriate listing of the species under the Act. These include: the current number of occupied localities, current laws and regulations that act to protect the species, and our current understanding of threats and their impact on the tidewater goby. The 5-year review recommended that we reclassify the tidewater goby from endangered to threatened because we believed that the species was not an imminent danger of extinction. The main reason for this recommendation was that the number of localities known to be occupied had more than doubled since listing. The 5-year review also concluded that the tidewater goby may be more resilient in the face of severe drought events than believed at the time of listing. The 5-year review also stated that threats identified at the time of listing have been reduced or are not as serious as thought. Although numerous threats to the tidewater goby have been identified (e.g., non-native predation and competition, pollution, cattle grazing), information on the degree of impact these threats may have on tidewater gobies is generally lacking. According to the 5-year review, the increase in occupied localities indicates that these threats appear to not be having a major impact on the tidewater goby.

On May 18, 2010, we received a petition dated May 13, 2010, from The Pacific Legal Foundation, requesting that the tidewater goby be reclassified as threatened under the Act. Included in the petition was reference to the 5-year review of the tidewater goby's status published by the Service in 2007. We published a 90-day finding on January 19, 2011 (76 FR 3069), that stated our conclusion that the petition presented substantial scientific or commercial information indicating that the petitioned action (reclassification of the tidewater goby) may be warranted. We will announce a 12-month finding on the petition to reclassify the tidewater goby as threatened under the Act in 2012. The species currently remains listed an endangered.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 *Code of Federal Regulations* 402.02). For the purposes of these biological and conference opinions, we consider the action area to include the 269 acres that Caltrans anticipates will be used for construction and staging sites along the 11-mile stretch of Highway 101. Furthermore, we are including in the action area all construction and staging sites within Arroyo Parida Creek for a distance of distance of 500 feet upstream and downstream of the work area. Arroyo Parida, Toro Canyon, Romero, Oak, and San Ysidro Creeks are all within the action area and support soft bottom, hard substrate, and water column habitats. Caltrans conducted surveys for sensitive species and habitat assessments for tidewater goby, steelhead trout, California red-legged frog, southwestern pond turtle (*Emys marmorata*), two-striped garter snake (*Thamnophis hammondii)*, Belding's Savannah sparrow (*Passerculus sandwichensis beldingi*), light-footed clapper rail (*Rallus longirostris levipes*), southwestern willow flycatcher (*Empidonax traiillii extimus*), and least Bell's vireo (*Vireo bellii pusillus*) throughout the project area (Caltrans 2012). Because no tidewater goby were found outside of Arroyo Parida Creek and Caltrans' avoidance and minimization measures for tidewater goby only apply to Arroyo Parida Creek. As described below, tidewater gobies have only been found in, and revised critical habitat has only been proposed for, Arroyo Parida Creek within the action area. Our biological and conference opinion only analyzes effects to tidewater goby and its proposed revised critical habitat within Arroyo Parida Creek.

Tidewater Goby

Arroyo Parida is a 5.4 mile-long coastal stream that flows from the steep southern face of the Santa Ynez Mountains to the Pacific Ocean. Located just northwest of Carpinteria, the creek drains an approximate 3,080-acre watershed. The upper watershed is mostly in national forest land with some rural residential areas occurring in the foothills. In its upper reaches, a debris basin is located approximately 1,000 feet upstream of the Oil Canyon Creek and Arroyo Parida Creek confluence, and it acts as a migration barrier to steelhead (Stoecker et al 2002). At Highway 192 (Foothill Road), approximately 1 mile upstream from the ocean, the concrete-lining below the highway bridge is an additional impediment to fish passage. Upstream of Highway 192, the creek possesses some riparian overstory canopy. Downstream of Highway 192, agricultural operations have compromised the riparian buffer and in some cases directly deposited sediment into the active channel. Near its outlet, Arroyo Parida Creek is channelized and constrained by development. Here, the creek flows under Via Real County Road, then under the southbound and northbound Highway 101 bridges, under a Union Pacific Railroad trestle bridge, and finally under Padaro Lane before it follows a rip-rap lined channel to the Pacific Ocean.

Habitat for tidewater gobies in Arroyo Parida Creek appears to be adequate to support foraging and breeding. The population size and distribution of tidewater gobies in the creek are unknown, including whether the population is persistent over time. Adults and juveniles of this species could use benthic open water habitat as well as emergent vegetation habitat. Distribution of

tidewater gobies in the creek is unlikely to be uniform, with differences between the open water and dense emergent vegetation. In open water, areas with anoxic bottom waters would be unsuitable for tidewater gobies, although some could use more oxygenated waters near the surface.

Proposed Revised Critical Habitat for the Tidewater Goby
In our proposed revised designation of critical habitat for the tidewater goby, we refer to Arroyo Parida Creek as Arroyo Paredon Creek and it is in Unit SB-12, Arroyo Paredon. Approximately 0.156 acre of the proposed project occurs within the proposed revised critical habitat Unit SB-12, Arroyo Paredon for tidewater goby.

Recovery Plan for the Tidewater Goby
The final recovery plan for the tidewater goby subdivided the geographic distribution of this species into six recovery units, encompassing a total of 26 sub-units defined to genetic differentiation and geomorphology. Arroyo Parida Creek is included the Sub-Unit CO3 of the Conception Recovery Unit. The CO3 Sub-Unit extends from Point Arguello to the southeastern terminus of the steep Seacliff region. This Sub-Unit is a fairly long stretch of coast and contains a large number (28) of small habitats, which are located in Santa Barbara County. Primary tasks for this Sub-Unit as recommended in the recovery plan include: 1) population monitoring; 2) substantiate Sub-Unit with genetic studies; and 3) consider recolonization if there is a 25 percent reduction in the number of inhabited locations. The available tidewater goby habitat in Arroyo Parida Creek encompasses approximately 0.2 to 1.0 acre. The final recovery plan does not specify the recovery function of Arroyo Parida Creek in Santa Barbara County.

EFFECTS OF THE ACTION

Tidewater Goby
Because tidewater goby have only been found in Arroyo Parida Creek, and it is the only portion of the action area within the proposed critical habitat designation, we are only analyzing effects to the species within Arroyo Parida Creek. Tidewater gobies have not been found in any of the other creeks within the action area, so we are not analyzing effects to the species in the creeks in those portions of the action area; however, we do not expect these effects to tidewater goby in the other creeks in the action area because they do not occur in them. Construction activities that would directly affect tidewater gobies and tidewater goby habitat that are present within the project site consist of sedimentation; de-watering or stream diversions; individuals may be injured or killed during the construction of the proposed project and during follow-up monitoring and maintenance activities; stranding resulting in desiccation, suffocation, or opportunistic predation; and the capture and the relocation of tidewater gobies from the work areas within the channel. Activities at and upstream of the Highway 101 Arroyo Parida Creek Bridge could directly affect tidewater gobies if any are present in those locations and could indirectly affect this species downstream through de-watering or altered water flows in the creek and potential releases of sediment or pollutants into the stream that affects water flows into tidewater goby habitat.

Tidewater gobies may be breeding during the proposed project, and any eggs located within the dewatering area would not be detectable. Breeding substrate composition may be altered by vegetation removal activities, and sediment deposition. Tidewater goby eggs may be smothered by increased sediment deposition. These eggs may be injured or killed during the proposed condition during vegetation removal activities. Hazardous material, such as fuels, oils, lubricants, or herbicides could enter the creek and pollute the water reducing the health and survival of tidewater gobies and even result in death. Although tidewater gobies may breed any time of the year, this impact would be minimized by the Caltrans' proposal to conduct the project in the late summer to fall when breeding activities are not at their peak. Caltrans proposes to implement BMPs in the event that an accidental spill or inadvertent discharge of hazardous material occurs.

Sedimentation that would occur during construction activities may result in tidewater goby injury, death, and lowered breeding success. Sediment may affect tidewater gobies by impairing the efficiency of their gill filaments and exposing them to higher salinities as they flee downstream. Direct effects of sedimentation include mortality, reduced physiological function, and burrow smothering. Indirect effects of sedimentation include potential alteration to the food web which could create cascading effects to higher trophic levels. A reduction in phytoplankton can be attributed to increased turbidity, which can therefore reduce zooplankton, in turn reducing benthic macroinvertebrates, and thus reducing prey available to tidewater gobies (Henley et al. 2000). These effects would be minimized because Caltrans' will implement BMPs and other minimization measures for the project according to their NPDES (Caltrans 1999) and BMP Manual (Caltrans 2003), which includes measures to minimize erosion and sedimentation, such as using sand bags, straw bales, straw wattles, or other erosion control materials during restoration to dissipate the energy of flowing water, reduce soil erosion, and prevent sediment or other materials from entering the creeks.

During construction of the proposed project, dewatering of Arroyo Parida Creek may result in the death of any tidewater gobies in the dewatered area due to stranding resulting in desiccation, suffocation, entrainment in pumps, or opportunistic predation. To minimize these effects, Caltrans has proposed to capture and relocate tidewater gobies from areas that would be dewatered (Robertson 2012c). Tidewater gobies may be injured or killed during relocation activities, from mishandling, physiological stress, or from capture and relocation equipment. To minimize these potential effects, Caltrans proposes to use personnel who are approved by the Service and have experience relocating tidewater gobies, and to follow guidelines in the Service's tidewater goby survey protocol (Service 2005). However, the potential exists that some tidewater gobies may not be located and will desiccate, or may still be killed or injured during the capture and relocation procedures despite careful procedures. Caltrans would also screen the pump intakes with wire with no greater than 0.125-inch mesh diameter should reduce the potential that tidewater gobies would be caught in the inflow (Robertson 2012c).

Construction equipment and materials that have the potential to contribute pollutants to storm water discharges include vehicle fluids (e.g., oil, grease, petroleum, coolants, etc.), raw landscaping materials and wastes (e.g., plant materials, etc.), BMP materials (e.g., sandbags, coir

fiber mats, etc.,), treated lumber, and general litter. These materials may injure or kill tidewater gobies. The release of these materials into tidewater goby habitats would be minimized by the implementation of the BMPs and minimization measures proposed by Caltrans for the site, which includes measures to minimize or avoid the release of contaminants into tidewater goby habitat and to conduct refueling at least 50 feet from the top of the bank.

Noise and vibration from work activities would likely disturb tidewater gobies to some degree; however, these effects are temporary, lasting only for the duration of the construction activities. If tidewater gobies are driven from the vicinity of the work activities, we expect that they would return upon the completion of construction.

The removal of vegetation along the channel and banks of Arroyo Parida Creek would result in a temporary loss of habitat for tidewater goby. Caltrans has proposed that it the removal of vegetation within the channel would occur outside the peak tidewater goby breeding season in the late summer and early fall when population numbers are typically lower. The project would not create barriers to tidewater goby movement up and down the creek following construction. Caltrans has proposed that it would begin revegetation efforts at the earliest appropriate planting window following the completion of the bridge structure, but this activity may have to occur during a less than optimal time for tidewater goby depending on when construction is complete in relation to rains that may occur and flowing water in the creek with whether tidewater gobies are breeding in the creek at that time. Therefore, we expect the timing of this activity will minimize the effects to tidewater goby.

Approximately 11 willows would also be removed during the work in Arroyo Parida Creek as would the area of native plant restoration along the banks. This would represent a temporary loss of approximately 0.035 acre of riparian habitat. During construction within Arroyo Parida Creek, temporary impacts would occur to Waters of the U.S within the creek channels earth-moving equipment expands and contours the banks and the channel. If flowing water is present during construction, water diversions or dams would be used temporarily to maintain suitable dry working conditions in the work area. Approximately 0.013 acre of channel is expected to be lost through permanent shading. The completed project would result in a net gain of approximately 0.160 acre of natural creek bed in Arroyo Parida Creek.

Wetland restoration along the creek and banks would cause a temporary disturbance to habitat that could be used by the tidewater goby. Planting in shallow water along the shoreline at the restoration sites would also temporarily disturb potential habitat for the tidewater goby. Any individuals in those areas would likely move away from the disturbance during the planting process but subsequently could use the areas again.

Some potential exists for tidewater gobies excluded from a work area to be moved into habitat that does not contain those elements necessary to sustain the species (e.g., adequate food and suitable substrate type for breeding). For example, if exclusion from a work area results in overcrowding, tidewater gobies may compete to a greater degree for food, breeding substrate, and space. The effects of such types of the lack of certain resources are unknown but because

the tidewater goby has an annual life history, could lead to the extirpation of a population. Consequently, the potential needs to be carefully considered during the evaluation of any action covered by these biological and conference opinions. Upon completion of work activities, tidewater gobies will likely regain use of the disturbed habitat after restoration actions or natural processes restore appropriate water depths and substrate.

In summary, the proposed action could adversely affect all tidewater goby adults, juveniles, and/or eggs that may occur in Arroyo Parida Creek within the action area, but because the project effects would be temporary, the action area is limited, and the fact that Caltrans has proposed to implement the avoidance and minimization measures as described above, we anticipate that few tidewater goby adults, juveniles, and/or eggs are likely to be killed or injured during construction, maintenance, and monitoring activities. Because tidewater goby are not know from other creeks within the action area, Caltrans will survey these areas before work commences and will reinitiate if they are located; therefore adverse effects are not anticipated in these other creeks within the action area.

Proposed Revised Critical Habitat for the Tidewater Goby

Approximately 0.156 acre of the proposed project occurs within the proposed revised critical habitat Unit SB-12, Arroyo Paredon for tidewater goby and is proposed to be temporarily impacted by bridge construction. Permanent effects of the proposed project include: 1) permanent loss of 0.013 acre of channel that will be shaded under the increased size of the bridge; and 2) future beneficial effects that would result from replacement of the highway bridge with a longer structure that will accommodate an expanded creek channel within the state right of way (ROW). The channel will be widened under the new bridge structure resulting in 0.160 acre of additional natural creek bed, expanding potential habitat for tidewater goby at this location; however, the widening of the creek channel will occur a future time and not with this the completion of this proposed project.

Temporary impacts that may affect tidewater gobies include grubbing and grading, placement of temporary gravel fill, and physical degradation associated with equipment and personnel movement within the project impact area. At Arroyo Parida Creek, approximately 0.156 acre of proposed critical habitat for tidewater goby would be temporarily affected by this project. The majority of project-related impacts are considered short-term given the dynamic nature of this system and include the removal of vegetation along creek banks as well as the disturbance of the unvegetated channels.

Portions of critical habitat subject to temporary effects are expected to recover to pre-project conditions with implementation of the replanting and other measures included in the project description. Potential impacts to water quality will be minimized through the dewatering of the creek during construction activities, the use of erosion BMPs, and the anticipation that no chemical herbicides will be used.

Vegetation removal from the creek banks downstream of the highway bridges will reduce the amount of filtered shading on the creek, which is beneficial to tidewater goby and other native

fish. The filtered shading under natural vegetation differs from the complete shading under large, solid structures (such as bridges) in that some plants and animals can survive in partial shading, whereas complete shading prevents the growth of plants and decreases the likelihood that animals can survive there. This will be minimized by the revegetation and restoration of the area with native plants, including replanting of riparian trees at a 3:1 ratio. Temporarily impacted portions of the creek are anticipated to recover to pre-project conditions with implementation of the replanting and other measures included in this document. Because post-construction replanting of riparian areas is anticipated, it is unlikely that the proposed project will have any long-term or substantial effects on tidewater goby habitat within the project area.

Permanent, beneficial effects of the project will result from a gain of approximately 0.160 acre of unlined creek bed with the wider channel. The expanded creek channel will result in decreased velocities at peak flows, increased filtration and groundwater recharge, and will provide additional potential habitat for tidewater gobies at this location.

The indirect effects identified for this project are associated with the improvement of habitat through non-native plant removal and revegetation/mitigation efforts and downstream effects to water quality and tidewater goby habitat.

Summary of the Effects on the Tidewater Goby
The proposed project, as modified by proposed avoidance and minimization measures, should not reduce the reproduction, numbers, or distribution of the tidewater goby. We expect that although the proposed project would have some effects on a limited number of tidewater goby individuals, we do not believe the impacts would be substantial. Because the project effects would be temporary, the action area is limited, and the fact that Caltrans has proposed to implement the avoidance and minimization measures as described above, we anticipate that few tidewater goby adults, juveniles, and/or eggs are likely to be killed or injured during construction, revegetation, and maintenance and monitoring activities.

Because only a small portion of the proposed critical habitat would be affected by the project, we do not expect that the conservation function of proposed critical habitat unit SB–12, Arroyo Paredon would be appreciably diminished. The unit should still meet the goal of the critical habitat designation, which is the protection and management of the metapopulation dynamics of the tidewater goby for the conservation of the species, because the effects are temporary. The measures proposed by Caltrans should help avoid adverse changes to the PCE. We do not anticipate any permanent or long-term adverse effects to proposed revised critical habitat for the tidewater goby as a result of the proposed action.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We are currently unaware of other non-Federal actions that are

reasonably certain to occur in the action area that may adversely affect the tidewater goby or its proposed revised critical habitat.

CONCLUSION

After reviewing the current status of the species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed project is not likely to jeopardize the continued existence of tidewater goby nor adversely modify proposed revised critical habitat.

We have reached this conclusion for the following reasons:

1. Caltrans has proposed measures to minimize the potential adverse effects of project activities on the tidewater goby and its proposed revised critical habitat;

2. The area of the project in which tidewater gobies occur is generally small in area and the effects are of short duration;

3. Few individual tidewater gobies and a small area of its proposed revised critical habitat are likely to be disturbed during project activities; and

4. The tidewater goby population in Arroyo Parida Creek, within the project area, represents a small portion of the species distribution and a small portion of the species' proposed revised critical habitat, so anticipated effects are not likely to appreciably reduce the overall population status of the species or result in a major disruption of the critical habitat unit.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibits the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary. Caltrans must include them as binding conditions of its authorization for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this incidental take statement. If Caltrans fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the authorization, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR 402.14(i)(3)].

Incidental take of the tidewater goby will be difficult to detect because of its small body size and finding a dead or injured specimen is unlikely. Finding carcasses and assigning a cause of death are problematic, especially in the presence of numerous scavengers that are likely to find dead animals soon after they die. Tidewater gobies may be taken only within the area identified as occupied within the boundaries of the action area. This biological opinion does not anticipate adverse effects to or take of tidewater goby anywhere within the action area outside of Arroyo Parida Creek because Caltrans conducted surveys for sensitive species and habitat assessments throughout the project area, tidewater goby does not occur in any of the drainages in the project area outside of Arroyo Parida Creek, and Caltrans' proposed avoidance and minimization measures for tidewater goby only apply to Arroyo Parida Creek (Caltrans 2012).

We anticipate that few tidewater gobies will be taken through injury or mortality during restoration activities in the action area. Given the avoidance and minimization measures proposed by Caltrans, we anticipate that take of the tidewater goby will be limited to: capture for relocation purposes; harm or harassment due to work activities including noise, vibration, and temporary disturbance of habitat; injury or death of individuals by vegetation removal equipment if undetected in the project area. All tidewater gobies relocated from the project area are considered taken as a result of their capture. A subset of these captured individuals may be killed or injured as a result of their handling and relocation to other locations, or if they attempt to return to the project activity sites after they have been relocated.

While we are unable to reasonably anticipate the actual number of tidewater goby that would be taken by the proposed project within Arroyo Parida Creek, we must provide a number at which consultation would have to be reinitiated. The Environmental Baseline and Effects Analysis sections of these biological and conference opinions indicate that adverse effects to tidewater goby would likely be low given the nature of the proposed activities, and we, therefore, anticipate that take of tidewater gobies would also be low. We also recognize that for every tidewater goby found dead or injured, other individuals may be killed or injured that are not detected, so when we determine an appropriate take limit we are anticipating that the actual take would be higher and we set the number at a low limit.

Similarly, for estimating the number that would be taken by capture, we cannot predict how many may be encountered because the population numbers fluctuate between and within years. While we believe the benefits of relocation (i.e., minimizing mortality) outweigh the risk of capture, we must provide a limit at which consultation would be reinitiated. The number

captured should be much higher than those tidewater gobies will be killed or injured, so the take we anticipate for capture is magnitudes higher than what we expect for injury or mortality.

Therefore, if 10 (ten) tidewater gobies are found dead or injured, or, if 100 (one hundred) tidewater gobies are captured and relocated, Caltrans must contact our office immediately to reinitiate formal consultation. Under either take scenario, project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions.

This biological opinion provides an exemption from the prohibition against the taking of listed species, contained in section 9 of the Act, only for the activities included in the Description of the Proposed Action section of this biological opinion. We have determined that tidewater gobies are likely to be taken only within the defined boundaries of the work area where it affects Arroyo Parida Creek because tidewater gobies were not found during surveys in other similar habitat. While the action area is defined as the entire 269-acre area along a 11-mile stretch of Highway 101 between Carpinteria and Santa Barbara, California, as well as a distance of 500 feet upstream from the proposed project boundary, we only anticipate that take will occur in Arroyo Parida Creek. If tidewater gobies are found in other suitable habitat within the action area during project activities and could be adversely affected, that would constitute new information that would warrant reinitiation of formal consultation.

REASONABLE AND PRUDENT MEASURES

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of tidewater gobies:

1. Caltrans must monitor activities to ensure that the level of incidental take of tidewater goby that occurs during project implementation is commensurate with the analysis contained in this biological opinion.

2. Caltrans must implement specific activity restrictions to avoid or minimize the effects of project activities on the tidewater goby.

The Service's evaluation of the effects of the proposed action includes consideration of the measures to minimize the adverse effects of the proposed action on the tidewater goby that were developed by Caltrans and repeated in the Description of the Proposed Action portion of this biological opinion. Any subsequent changes in these measures proposed by Caltrans may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16. These reasonable and prudent measures are intended to supplement the protective measures that were proposed by Caltrans as part of the proposed action.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measures. These terms and conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure 1:

   1.1 The Service-approved biologist will conduct a training session for all project personnel prior to any project activities. At a minimum, the training will include a description of the tidewater goby and its habitat; the general provisions of the Act; the necessity for adhering to the provisions of the Act; the penalties associated with violating the provisions of the Act; the specific measures that are being implemented to conserve the tidewater goby while this project is being conducted; and the boundaries within which the project may be accomplished. The program will also cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on these species during project implementation. The project foreman will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Multiple education programs will be conducted as needed to inform new personnel brought on the job.

   1.2 Caltrans must develop and implement a monitoring plan to determine the level of incidental take of tidewater goby associated with the project activities in the action area. The monitoring plan must include a standardized mechanism for Caltrans employees, contractors, permittees, and volunteers to report any observations of dead or injured listed animals to the appropriate Caltrans and Service offices. Caltrans must collect information obtained through the monitoring to include in the annual report to the Service that is required by this incidental take statement and described in the "Reporting Requirements" section below.

   1.3 A Service approved biologist must conduct surveys for tidewater goby in other creeks within the action area immediately prior to project implementation.

2. The following terms and conditions implement reasonable and prudent measures 2:

   2.1 The capture, handling, and monitoring of the tidewater goby must be conducted only by Service-approved biologists. Caltrans must provide their qualifications of individuals that would be conducting these activities to the Service at least 15 days prior to project activities within the vicinity of the species' habitat. No project activities will begin in areas that could support tidewater goby until the Caltrans has received approval from the Service that the biologist(s) are qualified to conduct the work.

2.2 Prior to the onset of any project-related activities, the Service-approved biologists must identify appropriate areas to receive captured tidewater goby from the project areas. These areas must be in proximity to the capture site, contain suitable habitat, and not be affected by project activities to the best of the Service-approved biologists' knowledge.

2.3 If tidewater gobies are found and these individuals are likely to be killed or injured by work activities, the Service-approved biologists must be allowed sufficient time to move them from the site before work activities resume. The Service-approved biologist must relocate tidewater gobies the shortest distance possible to one of the pre-determined areas discussed in term and condition 2.2.

2.4 The limits of the project activities must be clearly marked to prevent construction equipment from entering areas beyond the footprint needed to complete the project. Colored flagging would be appropriate to delineate the project boundaries.

2.5 Vehicles and all project activities must remain within the defined activity area and use only designated access points and staging areas.

2.6 The work area must be kept clean to avoid attracting predators. All food and trash must be disposed of in closed containers and removed from the project site.

2.7 Caltrans must implement BMPs to avoid impacts to water quality in Arroyo Parida Creek and any other creek occupied by tidewater gobies, which include fueling and maintaining heavy equipment outside of the creek areas; checking equipment for leaks and spills; using sand bags, straw bales, straw wattles, or other erosion control materials during restoration to dissipate the energy of flowing water, reduce soil erosion, and prevent sediment or other materials from entering the creeks; and avoiding the use of herbicides.

2.8 All power equipment and vehicles will be kept in good working order and inspected each day for leaks prior to use. Leaks will be repaired immediately or problem vehicles or equipment will be removed from the project site. Equipment will be staged in containment or other suitable barriers overnight to prevent accidental leakage of fluids.

2.9 Appropriate spill containment and clean-up materials will be available on site at all times. Any spills will be cleaned up immediately and will not be buried or washed with water.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), Caltrans must submit an annual report of project activities to the Service's Ventura Fish and Wildlife Office (2493 Portola Road, Suite B; Ventura, California 93003). The report must include: (1) a table documenting the number of tidewater goby observed, killed, injured, or handled during the subject project implementation; (2) a summary of how the terms and conditions of these biological and conference opinions and the protective measures proposed by Caltrans worked; and (3) any suggestions of how these measures could be revised to improve conservation of this species while facilitating compliance with the Act. This information will assist the Service in evaluating future actions for the conservation of the listed species involved. Reports must be submitted to the Service's Ventura Fish and Wildlife Office 2 months following the completion of the subject project.

DISPOSITION OF DEAD OR INJURED SPECIMENS

As part of this incidental take statement and pursuant to 50 CFR 402.14(i)(1)(v), upon locating a dead or injured tidewater goby, initial notification within three working days of its finding must be made by telephone and in writing to the Ventura Fish and Wildlife Office (805-644-1766). The report must include the date, time, location of the carcass, a photograph, cause of death or injury, if known, and any other pertinent information.

Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. Should there be any injured tidewater goby, the Service should be contacted regarding the final disposition of the animals. The remains of any tidewater goby must be placed with the Ventura Fish and Wildlife Office, contact: Chris Dellith of our staff at (805) 644-1766, extension 227. In the case of take or suspected take of listed species not exempted in this biological opinion, the Ventura Fish and Wildlife Office must be notified within 24 hours.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Arroyo Parida Creek and all other creeks within the subject project should be monitored to determine the status of tidewater gobies. We recommend that a report be conducted annually which would summarize any findings of monitoring activities.

2. Caltrans should work with local agencies and governments towards the implementation of recovery actions identified in the tidewater goby recovery plan (Service 2005).

3. We recommend that any non-native predators of the tidewater goby be permanently removed from the wild if they can be captured while monitoring project activities. Anyone conducting such removals should be in compliance with the California Fish and Game Code.

4. Caltrans should conduct studies to increase our understanding of the population dynamics of the tidewater gobies in project area. Such studies could include developing metapopulation viability analysis and opportunities for reestablishing connectivity with nearby tidewater goby populations. This type of research and the data obtained could greatly assist Caltrans in future consultations within tidewater goby habitat.

REINITIATION NOTICE

This concludes formal consultation on the proposed South Coast 101 High Occupancy Vehicle (HOV) Project as described. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in these biological and conference opinions; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in these biological and conference opinions; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or section 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions regarding this consultation, please contact Mark A. Elvin of our staff at (805) 644-1766, extension 258.

Sincerely,

Diane K. Noda

Diane K. Noda
Field Supervisor

LITERATURE CITED

Ahnelt, H., J. Goschl, M.N. Dawson, and D.K. Jacobs. 2004. Geographical variation in the cephalic lateral line canals of *Eucylogobius newberryi* (Teleostei, Gobiidae) and its comparison with molecular phylogeography. Folia Zoologica 53: 385-398.

[Caltrans] California Department of Transportation. 1999. National Pollutant Discharge Elimination System (NPDES) Permit for storm water discharges from the State of California, Department of Transportation (Caltrans) properties, facilities, and activities (Order No. 99—06 – DWQ). 42 pp. July 15, 1999. Sacramento, California.

[Caltrans] California Department of Transportation. 2003. Storm water quality handbooks; project planning and design guide; storm water pollution prevention plan (SWPPP) and water pollution control program (WPCP) preparation manual; construction site best management practices (BMPs) manual. 257 p. March 2003.

[Caltrans] California Department of Transportation. 2011. Planting pallet for Sycamore [and Arroyo Parida] Creek. August 12, 2011. 1p.

[Caltrans] California Department of Transportation. 2012. Biological assessment; south coast Highway 101 high occupancy vehicle (HOV) project. Prepared for the U.S. Fish and Wildlife Service. Route 101 between the City of Carpinteria and the City of Santa Barbara, District 5- SB-101-1.4/12.3, 05-0N7000. 69 p. January 2012.

Dawson, M. N., J. L. Stanton, and D. K. Jacobs. 2001. Phylogeography of the tidewater goby, *Eucyclogobius newberryi* (Teleostei, Gobiidae), in coastal California. Evolution 55: 1167-1179.

Henley, W.F., M.A. Patterson, R.J. Neves, A.D. Lemly. 2000. Effects of sedimentation and turbidity on lotic food webs: a concise review for natural resource managers. Reviews in Fisheries Science 8: 125–139.

Irwin, J.F., and D.L. Soltz. 1984. The natural history of the tidewater goby, *Eucyclogobius newberryi*, in the San Antonio and Schuman Creek system, Santa Barbara County, California. U.S. Fish and Wildlife Service, Sacramento Endangered Species Office, California. Contract No. 11310-0215-2.

Lafferty, K.D., C.C. Swift, and R.F. Ambrose. 1999a. Post flood persistence and recolonization of endangered tidewater goby populations. North American Journal of Fisheries Management (in press).

Lafferty, K.D., C.C. Swift, and R.F. Ambrose. 1999b. Extirpation and recolonization in a metapopulation of an endangered fish, the tidewater goby. Conservation Biology 13: 1-8.

Moyle, P.B. 2002. Inland fishes of California. University of California Press, Berkeley and Los Angeles, California. 502 p.

Robertson, M. 2012a. Electronic mail requesting conference opinion for tidewater goby proposed revised critical habitat. Dated March 20, 2012. 1 p.

Robertson, M. 2012b Electronic mail regarding Caltrans' project description measure to have qualified botanists conduct focused surveys for *Nasturtium gambelii* and *Arenaria paludicola* in suitable habitat throughout the project area prior to construction activities. Dated July 2, 2012. 1 p.

Robertson, M. 2012c. Electronic mail with a document containing responses to questions regarding the Biological Assessment for South Coast Hwy 101 HOV project. Dated June 12, 2012. 5 p + attachments.

State Water Resources Control Board. 1999. Fact sheet for National Pollutant Discharge Elimination System (NPDES) Permit for storm water discharges from the State of California, Department of Transportation (Caltrans) properties, facilities, and activities (Order No. 99 06-DDWQ). 42 p. Dated July 15, 1999.

Steoker, M., and the Conception Coast Project. 2002. Steelhead assessment and recovery opportunities in southern Santa Barbara County, California.

Swenson, R.O. 1995. The reproductive behavior and ecology of the tidewater goby *Eucyclogobius newberryi* (Pisces: Gobiidae). Ph.D. Dissertation, University of California at Berkley.

Swenson, R.O. 1999. The ecology, behavior, and conservation of the tidewater goby, *Eucyclogobius newberryi.* Environmental Biology of Fishes 55: 99-114.

Swenson, R.O., and A.T. McCray. 1996. Feeding ecology of the endangered tidewater goby: effects of season, habitat, and time of day. Transactions of the American Fisheries Society 125: 956-970.

Swift, C.C., J.L. Nelson, C. Maslow, and T. Stein. 1989. Biology and distribution of the tidewater goby, *Eucyclogobius newberryi* (Pisces: Gobiidae) of California. Natural History Museum of Los Angeles County, No. 404.

Swift, C.C., T.R. Haglund, M. Ruiz, and R.N. Fisher. 1993. The status and distribution of the freshwater fishes of southern California. Bull. S. Calif. Acad. Sci. 92: 101-167.

Swift, C.C., P. Duangsitti, C. Clemente, K. Hasserd and L. Valle. 1997. Biology and distribution of the tidewater goby, *Eucyclogobius newberryi*, on Vandenberg Air Force Base, Santa Barbara County, California. Final report for U.S. National Biological Service Cooperative Agreement No. 1445-0007-94-8129.

U.S. Department of Transportation. 2007. Memorandum of understanding between the Federal Highway Administration and California Department of Transportation (Caltrans) for Caltrans assuming responsibility for consultation and coordination with resource agencies for most projects within the State of California.

[Service] U.S. Fish and Wildlife Service. 2005. Recovery plan for the tidewater goby (*Eucyclogobius newberryi*). Portland, Oregon. vi + 199 p.

[Service] U.S. Fish and Wildlife Service. 2007. Five year review for the tidewater goby. U.S. Fish and Wildlife Service, Ventura, California. 50 p.

Wang, J.C.S. 1982. Early life history and protection of the tidewater goby, *Eucyclogobius newberryi* (Girard), in the Rodeo Lagoon of the Golden Gate National Recreation Area. Cooperative National Park Research Study Unit, Technical Report 7, Institute of Ecology, University of California, Davis, CPSU/UCD 022/3.

Worcester, K.R. 1992. Habitat utilization in a central California coastal lagoon by the tidewater goby (*Eucyclogobius newberryi*). Master of Science thesis, California Polytechnic State University, San Luis Obispo, California.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

SEP 30 2013

In response refer to:
2013/9495

Larry Bonner
California Department of Transportation, District 5
50 Higuera Street
San Luis Obispo, California 93401-5415

Dear Mr. Bonner:

Enclosed is NOAA's National Marine Fisheries Service's (NMFS) Biological Opinion for the California Department of Transportation's (Caltrans) implementation of the proposed South Coast Highway 101 High Occupancy Vehicle Lanes Project (proposed action) located in Santa Barbara County, California (Caltrans Project # 05-07000-SB-101-1.4/12.3). Caltrans is proposing to widen Highway 101 between the City of Carpenteria and the City of Santa Barbara and replace bridges at Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek. The Biological Opinion addresses effects of this action on endangered steelhead and designated critical habitat for this species in accordance with Section 7 of the U.S. Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The Biological Opinion concludes that Caltrans' proposed action is not likely to jeopardize the continued existence of the endangered Southern California Distinct Population Segment of steelhead or destroy or adversely modify designated critical habitat for this species. NMFS concludes that the proposed action may result in the incidental take of steelhead, therefore, an Incidental Take Statement is included in the Biological Opinion. The Incidental Take Statement includes Reasonable and Prudent Measures that are necessary and appropriate to minimize the incidental take of steelhead. Jay Ogawa is the principal contact for this consultation. Please contact him at (562) 980-4061 or via email at jay.ogawa@noaa.gov if you have any questions concerning the Biological Opinion or if you would like additional information.

Sincerely,

FOR

William W. Stelle, Jr.
Acting Regional Administrator

Enclosure

cc: Mary Larson, CDFG
Chris Dellith, USFWS
Administrative File: 151422SWR2009PR00252

BIOLOGICAL OPINION

AGENCY: California Department of Transportation

ACTION: Construction of the South Coast High Occupancy Vehicle Lanes Project in Santa Barbara County, California

CONSULTATION CONDUCTED BY: National Marine Fisheries Service, Southwest Region

TRACKING NUMBER: **2013/9495**

DATE ISSUED: **September 30, 2013**

I. CONSULTATION HISTORY

On March 15, 2012, NOAA's National Marine Fisheries Service (NMFS) received from the California Department of Transportation's (Caltrans) office in San Luis Obispo, California, a written request for formal consultation under Section 7 of the U.S. Endangered Species Act (ESA). The request concerns Caltrans' South Coast Highway 101 High Occupancy Vehicle (HOV) Lanes Project (proposed action), in Santa Barbara County (Project # 05-07000-SB-101-1.4/12.3). Under the proposed action, Caltrans' will widen US-101 to three lanes in the northbound and southbound directions and replace bridges at Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek. Caltrans is taking responsibility as the lead Federal Agency for ESA compliance in accordance with the *Memorandum of Understanding between the Federal Highway Administration and Caltrans Concerning the State of California's Participation in the Surface Transportation Project Delivery Program Pursuant to 23 USC 327*, which became effective October 1, 2012. Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek are within the endangered Southern California Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*), and are designated critical habitat for this species. From 2009 to 2013 NMFS provided Caltrans with technical advice in letters and emails, and during site visits and teleconferences, for avoiding conflict between endangered steelhead and the proposed action. In this regard, NMFS offered recommendations that would maintain or improve the existing habitat and passage conditions for steelhead within the action areas to the maximum extent possible in light of the proposed action and given hydraulic constraints. NMFS requested more information on April 5, 2012 and April 13, 2013 to better understand the effects of the proposed action on endangered steelhead and designated critical habitat for the species. Following NMFS' receipt of the requested supplemental information on May 22, 2013, formal consultation was initiated on the same day.

This biological opinion is based on the best scientific and commercial data available, including information included in Caltrans' consultation request and biological assessment, a fish passage analysis, observations of the creek and instream habitat noted by NMFS biologists during on-site meetings with Caltrans, expected effects of the proposed action on steelhead and critical habitat, and the ecological literature. A complete administrative record for this consultation is maintained on file at NMFS' Southwest Regional Office (501 W. Ocean Blvd., Suite 4200, Long Beach, California 90802).

II. DESCRIPTION OF PROPOSED ACTION

A. Proposed Action

The purpose of the proposed action is to widen US-101 between post mile (PM) 1.4 and PM 12.3 in Santa Barbara County. An HOV lane will be added in both the south and northbound directions to reduce congestion and delay, provide capacity for future travel demand, and encourage modal shift to transit and carpooling. To accommodate the addition of an HOV lane, bridge replacements will occur at Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek. Construction of the proposed action is expected to begin in 2016 or 2017. All instream work will occur over 2 to 3 consecutive construction seasons between June 1 and October 31. Construction equipment to be used during the proposed action include; excavators, concrete-breaker, cement-mixing trucks, cement-pumps, pick-up trucks, and a pile-driving hammer.

B. Proposed Construction Activities

The following description summarizes the proposed activities to prepare each action area for construction in the dry. Information specific to each proposed bridge removal is presented subsequently.

Proposed activities to prepare the action area for construction.—With regard to preparing the action area within each creek for construction, construction sites will be isolated from surface flow and any steelhead within the affected area will be relocated, if water is present. A coffer dam will be constructed across the channel immediately upstream of the existing US-101 bridge and remain in place for the duration of each construction season. Surface flow will travel through the work area via corrugated high density polyethylene pipe and return to the creek downstream. After the immediate work area is dewatered and all steelhead have been removed and relocated, and the water diversion is functioning as designed, steelhead will be able to migrate volitionally downstream within the pipe.

Prior to the actual diversion of surface water, surveys will be conducted up and downstream of the work area within each creek to identify suitable habitat for steelhead relocation efforts. The entire work area will be surveyed for steelhead, which will be captured with seines and dipnets. Once relocations are complete, streamflow will be diverted slowly and in stages to ensure the creek does not dewater suddenly. As flows are diverted, continual surveys of the dewatered area will be undertaken by biologists, and all steelhead in the dewatered area will be captured and relocated from residual wetted areas. Surveys of the work area will continue for several hours to ensure that all steelhead are removed from the dewatered area and relocated to suitable habitat

upstream or downstream within each creek. Additional measures will be undertaken to minimize take of steelhead and adverse effects to critical habitat during the dewatering process and subsequent construction activities. If groundwater is encountered after the diversion of surface flows, water will be pumped to a settling basin to remove any suspended sediments prior to discharge back into the creek. Pump intakes will be screened with wire mesh no larger than 2-millimeters to prevent steelhead fry from entering the pump system. All pumps will be monitored by a fish biologist to ensure that no fish are impinged on the intake during the dewatering process. Upon completion of the proposed action and construction activities each season, barriers to surface flow shall be removed and the streambed will be restored to pre-construction conditions if altered during construction activities. Detailed grading plans will be used to retain the existing heterogeneity of substrate and topography (*i.e.*, thalweg profile).

Proposed construction activities and creek-specific bridge replacements.—After the work area is dewatered, Caltrans will begin demolishing target bridges in sections using an excavator stationed on the roadway. Concrete debris will be removed from the creek channel as necessary. Best management practices (BMPs) will be maintained throughout the demolition and construction periods to minimize erosion and sedimentation of the disturbed sections of the work area. These BMPs include, jute-netting, straw-fiber rolls, silt-fencing, and hay bales. After the demolished section has been removed, bridge piles will be driven with an impact hammer for bridge abutment and pier foundations. A concrete-mixing truck staged on the roadway will pour concrete into forms to create the support structures and bridge deck. All vehicle and equipment maintenance, material storage, concrete washouts and sanitary facilities will be located outside of creek limits at least 50-feet from downstream drainage facilities and watercourses. Stream specific details of the bridge replacements are provided as follows.

At Arroyo Paredon Creek, the two existing northbound and southbound US-101 bridges that pass over the creek will be replaced with one bridge (124-feet wide x 80-feet long). The bridge replacement is expected to occur over two construction seasons (June 1 to October 31) beginning in 2016 or 2017. Caltrans proposes to dewater an approximately 250-foot long section of Arroyo Paredon Creek each construction season. The new bridge will have two 25-foot wide spans (bays) separated by a concrete pier and have the ability to convey a 25-year flood event. The bridge is proposed to be 3-feet longer than the existing structure and will result in the gain of approximately 0.012 acres of natural creek bed. The location of the new abutments and pier will match the alignment of the existing channel.

At Romero Creek, the two existing US-101 bridges over the creek will be replaced with one single-span structure (101-feet wide x 92-feet long) that will be constructed over three seasons (June 1 to October 31) beginning in 2016 or 2017. Caltrans proposes to dewater an approximately 175-foot long section of creek each season. The new bridge will be 20-feet longer and have the ability to convey a 100-year flood event. The wider channel will result in approximately 0.13 acres of natural creek bed. The location of the new abutments will match the alignment of the existing channel.

At San Ysidro Creek, the two existing US-101 bridges over San Ysidro Creek will be replaced with one bridge (113-feet wide x 80-feet long) that will span the width of the channel. The proposed bridge will be constructed over three seasons (June 1 to October 31). Caltrans

proposes to dewater an approximately 185-foot long section of creek each season. The wider structure will align with the existing channel and result in a gain of approximately 0.11 acre of unlined streambed and be able to convey a 100-year flood event.

Proposed post-construction activities.—Following construction of the bridge structures, Caltrans proposes to implement a landscape architecture planting plan that includes trees and native grasses. Planting of arroyo willows and coastal live oaks will occur at a 3:1 ratio and Monterey pines and eucalyptus will be replaced in-kind. Native grasses and forbs will be planted in disturbed areas or areas that are vegetated by invasive plants. All riparian plantings will be monitored for three years to ensure successful revegetation.

C. Action Area

The action area refers to all areas to be affected directly or indirectly by the proposed action and not merely the immediate area involved in the action (50 CFR § 402.02). The action area includes the linear extent (upstream to downstream) of bridge crossings over three creeks along US-101 between PM 1.4 and PM 12.3 in Santa Barbara County. These areas are located at the following US-101 crossings: Arroyo Paredon Creek (PM 5.63), Romero Creek (PM 9.34), and San Ysidro Creek (PM 9.56). The action area extends approximately 65-feet upstream from the crossing at Arroyo Paredon Creek and approximately 40-feet upstream from the crossing at Romero Creek and San Ysidro Creek to account for the upper limit of the water diversion and 350-feet downstream from the end of the diversion, where effects such as elevated turbidity are anticipated to cease. The approximate length of Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek within the action area is 600-feet, 525-feet, and 535-feet. The action area extends laterally to encompass the riparian corridor to the top of the banks of all three creeks.

D. Interrelated and Interdependent Activities

Interrelated actions are those actions that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the proposed action (50 CFR § 402.02). There is no known action interrelated or interdependent with the proposed action.

III. STATUS OF THE SPECIES AND CRITICAL HABITAT

This biological opinion considers the potential effects of the proposed action on the Southern California steelhead DPS and their designated critical habitat. For this reason, the status of the Southern California steelhead DPS, their life history and habitat requirements, value of critical habitat, and recent factors affecting populations are described as follows.

A. Status of Southern California Steelhead

The endangered Southern California DPS of steelhead extends from the Santa Maria River in Santa Barbara County to the California-Mexico border. NMFS characterized the abundance of steelhead in the DPS when the species was originally listed (August 18, 1997, 62 FR 43937) and cited this information as the basis for the recent re-listing of the Southern California DPS of

steelhead as endangered (May 3, 2006, 71 FR 834). Estimates of historical (pre-1960s) and more recent (1997) abundance show a precipitous drop in numbers of spawning adults for major rivers in the southern California DPS. An updated status report states that the chief causes for the numerical decline of steelhead in southern California include urbanization, water withdrawals, channelization of creeks, human-made barriers to migration, and the introduction of exotic fishes and riparian plants (Good *et al.* 2005), and the most recent status review indicates these threats are essentially unchanged (Williams *et al.* 2011). Historical data on steelhead numbers for this region are sparse. The historic and recent steelhead abundance estimates, and percent decline are summarized in Table 1. The run size estimates illustrate the severity of the numerical decline for the major rivers in the Southern California DPS of steelhead (Good *et al.* 2005, Williams *et al.* 2011).

Table 1. Historical and recent abundance estimates of adult steelhead in the Southern California DPS. Data are from Good *et al.* 2005.

	Pre-1950	Pre-1960	1990s	2000s	Percent Decline
Santa Ynez River	20,000-30,000		< 100		99
Ventura River		4,000-5,000	< 100	< 100	96
Santa Clara River		7,000-9,000	< 100	< 10	99
Malibu Creek		1,000	< 100		90

Recent stream surveys to document the species' current pattern of occurrence have concluded that of the 46 watersheds in the DPS which steelhead occupied historically, *O. mykiss* currently occupy only about 40% to 50% of these watersheds (Boughton *et al.* 2005). Fish surveys by NOAA Southwest Fisheries Science Center (SWFSC), direct observations by NMFS biologists, and anecdotal information from local biologists working on major rivers and creeks throughout the DPS suggest that although steelhead populations continue to persist in some coastal watersheds, the population numbers are exceedingly small (Good *et al.* 2005, Williams *et al.* 2011). On a positive note, there have been observations of steelhead recolonizing vacant watersheds during years with abundant rainfall, notably San Mateo Creek and Topanga Creek (Good *et al.* 2005). NMFS reviews the status and viability of the Southern California DPS of steelhead on the basis of available information (including new information) about the species abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000) every five years as required by the ESA. In the last two status reviews, NMFS concluded that the risk of extinction for the Southern California DPS of steelhead was unchanged (Good *et al.* 2005, Williams *et al.* 2011).

B. Life History and Habitat Requirements

The major freshwater life history stages of steelhead involve freshwater rearing and emigration of juveniles, upstream migration of adults, spawning, and incubation of embryos (Shapovalov and Taft 1954, Barnhart 1991, Meehan and Bjornn 1991, Moyle 2002). Steelhead juveniles rear in freshwater for one to three years before migrating to the ocean, usually in the spring, where they may remain for up to four years. The timing of outmigration appears to be influenced by

photoperiod, streamflow, and temperature (Shapovalov and Taft 1954). In some drainages, juvenile steelhead may rear in lagoon or estuary habitats for several weeks prior to ocean entry.

Steelhead grow and reach maturity at age two to four while in the ocean. In southern California, adults generally migrate to natal streams for spawning December through March (Fukushima and Lesh 1998), but some adults may not enter coastal streams until late spring, depending on flow conditions. Adults may migrate several to hundreds of miles in some watersheds to reach their spawning grounds. Although spawning may occur during January through April, the specific timing of spawning may vary a month or more among streams within a region. Steelhead do not necessarily die after spawning and may return to the ocean, sometimes repeating their spawning migration one or more years. Female steelhead dig a nest in the streambed and then deposit their eggs. After fertilization by the male, the female covers the nest with a layer of gravel, and the embryos incubate within the gravel pocket. Hatching time varies from about three weeks to two months depending on water temperature. The young fish emerge from the nest about two to six weeks after hatching.

Habitat requirements of steelhead in streams generally depend on the life history stage. Habitat for southern California steelhead consists of water, substrate, and adjacent riparian zone of estuarine and riverine reaches of coastal river basins, and major rivers. Generally, streamflow volume, water temperature, and water chemistry must be appropriate for adult upstream migration and juvenile downstream migration. Low streamflow, high water temperature, physical barriers, low dissolved oxygen, and high turbidity may delay or halt upstream migration of adults and timing of spawning, and downstream migration of juveniles and subsequent entry into estuary, lagoon, or ocean. These factors affect steelhead to varying degrees in southern California watersheds, depending on the level of anthropogenic disturbance and stream conditions within the watershed. Suitable water depth and velocity, and substrate composition are the primary requirements for spawning, but water temperature and turbidity are also important. Dissolved oxygen concentration, pH, and water temperature are factors affecting survival of incubating embryos. Fine sediments, sand and smaller particles, may fill interstitial spaces between substrate particles, thereby reducing water flow and dissolved oxygen levels within a nest. Juvenile steelhead require living space (various combinations of water depth and velocity), shelter from predators and harsh environmental conditions, adequate food resources, and suitable water quality and quantity, for ontogeny and survival during summer and winter. Young-of-the-year and yearling steelhead generally use shallow water habitats such as riffles and runs during much of the year where these habitats exist (Roper *et al.* 1994). However, young-of-the-year and older juveniles may seek cover and cool water in pools during periods of elevated water temperature and low flows (Nielsen *et al.* 1994, Matthews and Berg 1997).

C. Regional Climatic Variation and Trends

The interaction of changing climate conditions with other stressors such as habitat fragmentation is likely to result in additional threats to natural resources (McCarty 2001), including the viability of steelhead populations. In the southwest region (southern Rocky Mountains to the Pacific Coast), the average temperature has already increased roughly 1.5 °F compared to a 1960-1979 baseline period. By the end of the century, average annual temperature is projected to rise approximately 4 to 10 °F above the historical baseline, averaging over the entire region

(Karl *et al.* 2009). The southern California region is experiencing an increasing trend in droughts, as measured by the Palmer Drought Severity Index from 1958 to 2007 (Karl *et al.* 2009). With regard to the character of precipitation, the southwest region, including California, showed a 16% increase in the number of days with very heavy precipitation from 1958 to 2007. Generally for most areas of the country, the fraction of precipitation falling as rain versus snow has increased during the last 50 years (Karl *et al.* 2009). Indicators of climate variability in the western United States exhibit trends toward an earlier spring since the mid-1970s (Cayan *et al.* 2001).

With regard to expected climate trends and projections on an ecoregional scale within southern California (PRBO Conservation Science 2011), regional climate models[1] project mean annual temperature increases of 1.7 to 2.2 °C (3.1 to 4.0 °F) by 2070. Although there is relatively little consensus about projected effects of climate change on precipitation patterns, Snyder and Sloan (2005) projected mean annual precipitation in southwestern California to decrease by 2.0 cm (4.0%) by the end of the 21st century. Wildfires periodicity may increase in the future owing to changes in climate; Westerling and Bryant (2008) evaluated wildfire risk in this region and found that the probability of occurrence of large (>200-hectare) fires in southern California ranged from a decrease of 29% to an increase of 28%.

D. Status of Critical Habitat

Critical habitat for the Southern California DPS of steelhead was designated on September 2, 2005, and consists of the stream channels listed in 70 FR 52488. Critical habitat has a lateral extent defined as the width of the channel delineated by the ordinary high-water line as defined by the Corps in 33 CFR 329.11, or by its bankfull elevation, which is the discharge level on the streambank that has a recurrence interval of approximately 2 years (September 2, 2005, 70 FR 52522). To better define critical habitat for steelhead, NMFS' Critical Habitat Analytical Review Teams (CHARTs) developed a list of Primary Constituent Elements (PCEs) specific to steelhead and their habitat. PCEs are components of stream habitat that have been determined to be essential for the conservation of the Southern California DPS of steelhead, and are specific habitat components that support one or more steelhead life stages and in turn contain physical or biological features essential to steelhead survival, growth, and reproduction, and conservation. These include:

1. **Freshwater spawning sites** with sufficient water quantity and quality and adequate substrate (i.e., spawning gravels of appropriate sizes) to support spawning, incubation and larval development.

2. **Freshwater rearing sites** with sufficient water quantity and floodplain connectivity to form and maintain physical habitat conditions and allow salmonid development and mobility; sufficient water quality and forage to support juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams, beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

[1] See page 43 of PRBO Conservation Science (2011) for a summary of all models referenced, emission scenarios and outputs.

3. **Freshwater migration corridors** free of obstruction with adequate water quality and quantity conditions and natural cover to support juvenile and adult mobility and survival.

4. **Estuarine areas** free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and salt-water; natural cover; and juvenile and adult forage supporting growth and maturation.

5. **Marine areas** free of obstruction with sufficient water quality and quantity conditions and forage to support salmonid growth and maturation; and natural cover.

Streams designated as critical habitat in the endangered Southern California DPS of steelhead contain the above PCE attributes in differing amounts and to varying degrees, depending on the particular stream and the characteristics of the watershed. Perennial streams with conditions suitable for steelhead are less abundant in the southern portion of the DPS compared to the northern portion. Some of this is due to the amount of coastal development in the southern region. During the summer many creeks at the southern extent of the species' range become intermittent in sections or dry completely, and stream temperatures may become a factor in terms of suitability for rearing steelhead. In some cases this occurrence is natural and in other cases it is due to anthropogenic factors. Overall, steelhead oversummering habitat is thought to be the most geographically limited of all the habitats that are necessary for essential life history function (Boughton *et al*. 2006).

As part of the process to gather and analyze information to finalize the designation of critical habitat, several CHARTs compiled all available information regarding the distribution and habitat use of steelhead within the endangered Southern California DPS of steelhead, as well as habitat condition. The CHARTs performed conservation assessments for all occupied watersheds, including riverine reaches and estuarine areas within each DPS. Essential features of critical habitat for steelhead spawning, rearing, and migration were found to be contained in 741 miles (1,186 km) of occupied stream habitat within the 32 HSAs of the Southern California Steelhead DPS. Streams with high conservation value were found to have most or all of the PCEs of critical habitat and extensive areas that were suitable for steelhead spawning, rearing, and migration, despite negative effects of anthropogenic factors. Streams with medium or low conservation value were less suitable for steelhead in terms of spawning rearing and migration, and had fewer of the PCEs necessary for steelhead survival growth and reproduction, generally due to anthropogenic factors. While many streams in the DPS have been found to have high conservation value for survival and recovery of the species, the spawning, rearing, and migratory habitat within the DPS are heavily impacted by dams, diversions, and human development. As a result, much of the available habitat has become severely degraded, and habitat degradation has been a main contributing factor to the current endangered status of the DPS (Good *et al*. 2005). The most recent status review found that these threats have remained essentially unchanged (NMFS 2011).

E. Population Viability

One prerequisite for predicting the effects of an action on a species (including establishing a point of reference for the effects analysis) involves an understanding of whether the broad

population is likely to experience a reduction in the likelihood of being viable, i.e., the hypothetical state(s) in which extinction risk of the broad population is negligible and full evolutionary potential is retained (Boughton *et al.* 2006). By definition, a viable salmonid population (VSP) is an independent population of any Pacific salmonid (genus *Oncorhynchus*) that has a negligible risk of extinction due to threats from demographic variation (random or directional), local environmental variation, and genetic diversity changes (random or directional) over a 100-year time frame. Other processes contributing to extinction risk (catastrophes and large-scale environmental variation) are also important considerations, but by their nature they need to be assessed at the larger temporal and spatial scales represented by DPSs or other entire collections of populations. An independent population is any collection of one or more local breeding units whose population dynamics or extinction risk over a 100-year time period is not substantially altered by exchanges of individuals with other populations. Generally, an independent population is contained within a distinct stream or possibly an entire watershed, and represents a subunit of the entire DPS.

Four principal parameters are used to evaluate the long term viability and conversely the extinction risk for the endangered Southern California DPS of steelhead. They are: (1) abundance; (2) population growth rate; (3) population spatial structure; and (4) population diversity. These specific parameters are important to consider because they are predictors of extinction risk and reflect general biological and ecological processes that are critical to the growth and survival of steelhead populations, and they are measurable (McElhany *et al.* 2000). To assess viability, guidelines or decision criteria are defined for each of the four parameters to further the viability evaluation (McElhany *et al.* 2000). Population viability for steelhead is based on four key concepts that provide the basis for judging the persistence of a population in the wild. The bases for these concepts can be found in the many publications regarding population ecology, conservation biology, and extinction risk (e.g., Pimm *et al.* 1988, Berger 1990, Primack 2004, see also McElhany *et al.* 2000 and Boughton *et al.* 2006). The four concepts are outlined below.

1. Abundance

Information about a population's size or abundance provides an indication of the sort of extinction risk a population faces. Small populations face a host of risks intrinsic to their low abundance; conversely, large populations exhibit a greater degree of resilience. Small populations tend to be at greater risk of extinction than large populations primarily because several processes that affect population dynamics operate differently in small populations than they do in large populations. Generally, the greater the size of a steelhead population, the greater the chance of it being viable in the long term. Within the endangered Southern California DPS of steelhead, abundance has been severely reduced from historic levels (Good *et al.* 2005) and this has negative implications for long term viability for this DPS.

2. Population Growth Rate

Population growth rate and factors that affect population growth rate provide information on how well a population is "performing" in the habitats it occupies during the life cycle. These parameters, and related trends in abundance, reflect conditions that drive a population's

dynamics and thus determine its abundance. Changes in environmental conditions, including ecological interactions, can influence a population's intrinsic productivity or the environment's capacity to support a population, or both. In regard to steelhead, the greater the productivity of a steelhead population the greater its ability to recover from environmental disturbance and the greater its viability. Because of the very low abundance of steelhead in southern California, the population growth rate has also been reduced, making the DPS less resilient to disturbance, and this has further reduced the long term viability of the DPS.

3. Spatial Structure

A population's spatial structure is made up of both the geographic distribution of individuals in the population and the processes that generate that distribution. A population's spatial structure depends fundamentally on habitat quality, spatial configuration, and dynamics as well as the dispersal characteristics of individuals in the population. Understanding the spatial structure of a population is important because the population structure can affect evolutionary processes and, therefore, alter the ability of a population to adapt to spatial or temporal changes in the species' environment over the long term (McElhany *et al*. 2000). Generally, steelhead populations that are thinly distributed over space are susceptible to experiencing poor population growth rate and loss of genetic diversity which result in lowered viability. Within the endangered Southern California DPS of steelhead, anthropogenic activities such as the introduction of migration barriers have substantially reduced the number of watersheds (or portions of watersheds) that are currently accessible to steelhead. This has significantly reduced the spatial structure of the DPS (Boughton *et al*. 2005).

4. Diversity

Steelhead populations possess a suite of life history traits that exhibit considerable diversity within and among populations, and this variation has important effects on population and DPS viability. Some of these varying traits are anadromy, timing of spawning, emigration, and immigration, fecundity, age-at-maturity, behavior, physiological and genetic characteristics, to mention a few. In terms of steelhead population viability, the more diverse the assortment of life history traits (or the more these traits are not restricted), the more likely the steelhead population is to survive a spatially and temporally fluctuating environment over the long term. Because anthropogenic activities have severely reduced and eliminated the expression of some life history traits of steelhead in southern California, the long term viability of the DPS has declined as well.

In summary, the endangered Southern California DPS of steelhead has been severely impacted by anthropogenic factors, and this has negatively affected the abundance, productivity, spatial structure, and diversity of the entire DPS. The endangered Southern California DPS of steelhead is currently not viable and is at a high risk of extinction. This finding is consistent with conclusions of past and recent technical reviews (Busby *et al*. 1996, Good *et al*. 2005, Williams *et al*. 2011), and the formal listing determination for the species (NMFS 1997, 2006).

IV. ENVIRONMENTAL BASELINE

Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek are coastal streams that originate in the Santa Ynez Mountains and flow through rural residential, agricultural, and urbanized areas of southern Santa Barbara County. Stream lengths are relatively short and the watersheds are comparatively similar in slope and size with steep upper watersheds and lower watersheds that flow through a narrow coastal terrace. US-101 traverses the mainstem of each creek in close proximity to their mouths (approximately 1/8 mile downstream). In the vicinity of the action area, the creeks flow through unlined concrete walled channels that are nearly devoid of riparian vegetation before entering the Pacific Ocean. The mostly ephemeral streams convey natural flow and agricultural and hard-surface runoff. Seasonal lagoons form at Arroyo Paredon Creek and Romero Creek. The three creeks have been designated as Core 3 watersheds in the NMFS Recovery Plan for Southern California Steelhead (NMFS 2012), which indicates their importance for recovery of the endangered Southern California DPS of steelhead.

A. Status of Critical Habitat in the Action Area

Aquatic habitat within the action area of Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek consists of shallow pools, runs and riffles. The average channel widths in the action area are between 21- and 28-feet and the stream banks consist of vertical concrete walls. The stream bed is composed of cobble and some small boulders overlaid by fine sediment. During the dry season, surface flow within the lower watersheds of each stream can be limited and in the action area is typically reduced to disconnected pools by mid-summer, many of which dry by the end of summer or early fall. Water quality is impaired by elevated levels of fecal coliform, nitrate, and other pollutants known to enter the waterway (Caltrans 2010). Santa Barbara County Flood Control (SBCFC) manages the lower watersheds as the creeks flow through urbanized areas in the vicinity of the action area. As a result, instream cover such as woody debris, large boulders, and other stream features that create habitat complexity for juvenile steelhead are removed annually from the channel. The north and south banks of the action area are mainly devoid of riparian vegetation due to a combination of channel modification and regular clearing and brushing during flood control maintenance. Species in the riparian canopy include arroyo willow (*Salix lasioepis*), western sycamore (*Platanus raceosa*), coast live oak (*Quercus agrifolia*), blue gum eucalyptus (*Eucalyptus globulus*), Monterey Pine (*Pinus radiate*) and alder (*Alnus rubra*). Overall, the PCEs of critical habitat for juvenile steelhead rearing (i.e., natural cover, shelter, pools, water quality/quantity, and riparian) within the action area are limited and degraded. Rearing and foraging habitat is limited by the simplified channel and poor water quality conditions. Habitat complexity that provides natural cover (e.g., large woody debris, large substrate, riparian and aquatic vegetation) is lacking. The PCEs for spawning habitat in the action area are degraded based on the degraded substrate conditions within the action area. Finally, the PCEs for migration are considered good through the action area, as there is no obvious barrier to adult or juvenile steelhead migration.

B. Status of Steelhead in the Action Area

Although no estimate of total steelhead abundance in Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek is available, there have been numerous sightings of *O. mykiss* within each creek. The historical presence of steelhead in each watershed has been documented (Stoeker 2002), and the recent presence of adult and juvenile *O. mykiss* in the vicinity of the action area have also been documented (Oberhoff and Cesena 2002, Stoeker 2002). In August 2009, one, 11-inch *O.mykiss* was observed in Romero Creek Lagoon approximately 800-feet downstream of the US-101 crossing (pers. comm. B. Trautwein). In the spring of 1999 and 2001, juvenile *O. mykiss* were observed in Arroyo Paredon Creek approximately 1/2-mile upstream of the US-101 bridge by SBCFD biologists (Oberhoff and Cesena 2002). Caltrans and NMFS biologists have observed several juvenile *O. mykiss* upstream and downstream of the action area on Romero Creek (Caltrans 2013, M. McGoogan, NMFS 2013, pers. obs.). In the spring of 2001, steelhead surveys within San Ysidro Creek were performed by Stoeker Ecological as part of the South Coast Steelhead Assessment and Recovery Project. The creek was surveyed within a 3.5-mile reach between the upstream end of the lagoon and the Montecito Water District pipeline. Relative abundance of juvenile *O. mykiss* within the reach was estimated at 318 individuals (90 fish/mile or 0.02 fish/foot) (Stoeker 2002). Based on similar watershed characteristics, habitat conditions and anecdotal observations of *O.mykiss* within the vicinity of the action area, the abundance of steelhead observed in San Ysidro Creek is an informative index of the potential abundance of steelhead within the lower reaches of Romero Creek and Arroyo Paredon Creek. Because construction of the proposed action will occur during the summer rearing season, NMFS expects juvenile steelhead to be present in the action area, although fewer are expected than have been found in spring. Adult steelhead are not expected to be present within the action area during the time of construction activities (June 1 to October 31).

C. Factors Affecting Species Environment in the Action Area and Vicinity

The Final Southern California Recovery Plan (NMFS 2012) identifies several sources of habitat impairments in the Conception Coast Biogeographic Population Group region that are relevant to the watersheds discussed in this biological opinion: roads, urban development, flood control maintenance, surface water diversions, and agricultural development. The stream environment within the action area is impacted by the SBCFC project, which constricts the stream to a narrow, concrete walled channel and by the US-101bridge that traverses the creek and is a source of road surface runoff. Upstream of the action area agricultural activities may contribute to degraded water-quality conditions in the action area. Barriers to steelhead migration are located upstream of the action area.

1. Channelization and Flood Control Maintenance

Current flood control practices in the lower watershed of each creek, including the section of stream within each of the three action areas, have confined the stream channel and limited opportunities for riparian communities to become established. Modification of the stream channel in the lower watershed has affected the amount of available steelhead habitat and the processes that develop and maintain preferred habitat by eliminating floodplain connectivity, limiting instream habitat complexity, and reducing riparian vegetation. Flood control practices

in the vicinity of the action area have disrupted stream sinuosity and inhibited the creeks ability to braid. Impacts to aquatic habitat primarily result from annual flood control maintenance which minimizes recruitment of large woody debris, aquatic vegetation, and establishment of a riparian canopy. These impacts result in negative effects to juvenile steelhead growth and survival by reducing new habitat types, limiting recruitment of organic material, and reducing lower food chain production.

2. Highway Encroachment

US-101 traverses the action area within each creek, and the location of the road likely results in runoff from the road surface entering the creeks during rainstorms, which may reduce the water quality within the action areas to an unknown degree. The effects on water quality from road surface runoff are most likely to occur during and shortly after rainfall events. Runoff from road surfaces can contain dirt, oil, automotive fluids, and petrochemicals that are harmful to aquatic life, including steelhead (Spence *et al.* 1996). Additionally, the highway has contributed to the confinement of the stream channel and diminished riparian vegetation.

3. Agricultural Development

Agricultural fields exist in the lower watershed of each creek and demands on upstream water resources may occur from these fields. It is unknown to what extent water demands may affect the quantity and extent of surface water and essential features of steelhead habitat within each of the action areas. Substantive withdrawal of surface water, especially during the dry season, has the potential to decrease the quality and availability of habitat for juvenile steelhead. Additionally, decreased flows could result in increased water temperatures and lower dissolved oxygen, both of which can cause stress and suffocation of juvenile steelhead (Spence *et al.* 1996). Upstream agricultural activities have the potential to degrade water quality in the action areas through sedimentation and agricultural runoff (Spence *et al.* 1996). Erosion and sedimentation are harmful to salmonids can bury less mobile organisms that serve as food to juvenile steelhead (Cordone and Kelley 1961). Agricultural runoff can transfer nutrients and pesticides to the creek, which can in turn lower dissolved oxygen levels by increasing algae growth in streams and decreasing forage for steelhead (Spence *et al.* 1996). These impacts, if occurring, have the potential to adversely impair steelhead survival within the lower watershed of each creek.

V. EFFECTS OF THE PROPOSED ACTION

This section describes potential effects of the proposed action on endangered steelhead and designated critical habitat for this species. To identify the potential effects, NMFS reviewed the proposed action and ecological literature concerning the effect of habitat changes on steelhead and aquatic habitat, and carefully considered the type, amount, and extent of habitat changes that are expected to result from the proposed action. A general knowledge of physical and biological processes, population dynamics, life history, and habitat requirements of steelhead supplemented the literature review, particularly where there was little or no information concerning effects of an impact on steelhead or the aquatic environment. With regard to critical habitat, this biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR §402.02, which was invalidated by *Gifford Pinchot Task Force v.*

USFWS, 378 F.3d 1059 (9th Cir. 2004), amended by 387 F.3d 968 (9th Cir. 2004). Instead, this effects assessment relies upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat. Therefore, in considering effects on critical habitat, NMFS assessed whether implementation of the proposed action would allow critical habitat to remain functional, or allow for primary constituent elements to become functionally established, serving the intended conservation role for the species.

Construction activities are expected to affect steelhead through dewatering, capture and relocation, temporary increased turbidity, and pile installation. Effects to critical habitat in the action areas include the temporary loss and disturbance of instream and riparian habitat during construction activities. The potential effects of these activities are described in more detail below.

A. Effects on Endangered Steelhead

Dewatering.—Within the action area of each creek streamflow diversion and dewatering of the immediate work area is expected to temporarily disrupt steelhead behavior patterns (*i.e.*, rearing, migrating), and cause temporary loss of aquatic habitat as well as loss of invertebrate forage. Approximately 250-, 175-, and 185-linear feet on Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek will be dewatered, respectively. The work area in each creek will be dewatered for up to 5 months during the dry season (June 1 through October 31) to allow construction work to proceed in dry conditions. Water diversions in Romero Creek and San Ysidro Creek may be installed up to three times (once per year when instream construction activities are expected) and the water diversion in Arroyo Paredon Creek may be installed up to two times (once per year when instream construction activities are expected).

Dewatering will temporarily preclude the action area from serving as a freshwater rearing site and a freshwater migration corridor for endangered steelhead. The ability of juvenile steelhead to migrate upstream through the action area will be hindered for several months while the surface-water diversion is in place. Juveniles downstream of the diversion are expected to remain in runs and riffles or access the seasonal lagoons until the work is complete. Downstream migration of juvenile steelhead from reaches upstream of the action area on each creek is not expected to be significantly affected by the diversion since downstream migrants would be able to migrate from upstream to downstream of the action area through the diversion pipe. Adult steelhead are not expected in the creeks and, therefore, are not likely to be affected by construction activities.

Aquatic macroinvertebrate forage will be temporarily reduced or eliminated within the action area of each creek as a result of isolating the work space from flowing water. Aquatic insects provide a source of food for instream fish populations, and may represent a substantial portion of food items consumed by juvenile steelhead. Effects to aquatic macroinvertebrates resulting from streamflow diversions and dewatering will be temporary because construction activities will be temporary, and rapid recolonization (about one to two months) of the restored channel area by macroinvertebrates is expected following rewatering (Cushman 1985, Thomas 1985, Harvey 1986). In addition, the effect of macroinvertebrate loss on juvenile steelhead is expected to be negligible because food from upstream sources would be available downstream of the dewatered

areas via drift. Based on the foregoing, the temporary loss of aquatic macroinvertebrates as a result of dewatering activities is not expected to adversely affect steelhead.

Ultimately, the loss of aquatic habitat associated with dewatering, and the impedance of juvenile upstream migration through the action area will be temporary and is not expected to result in lethal effects, as relocated steelhead will be able to use all aquatic habitat up or downstream of the dewatered portion of the creek, which is of similar quality as the dewatered area (J.Ogawa, NMFS, 2012, pers. obs.). Connectivity between the upstream and downstream stream reaches will be restored after the water diversion is removed and creek flows are returned to the dewatered area. Overall, effects to steelhead from water diversion are expected to be non-lethal and temporary.

Fish relocation.—During the dewatering process in each creek, the water diversion could harm rearing juvenile steelhead by concentrating or stranding them in residual wetted areas before they are relocated and rearing juvenile steelhead could be killed if they become stranded and are not moved out of the diversion area. In addition, steelhead are expected to move to adjacent areas of aquatic habitat during water diversion (Clothier 1953, Clothier 1954, Kraft 1972, Campbell and Scott 1984).

However, to reduce the likelihood of harm and mortality to juvenile steelhead within the area to be dewatered in each creek, biologists will survey the stream within the action area prior to and during the water diversion, and will capture and relocate steelhead to the nearest suitable habitat within each creek. Relocation sites upstream or downstream of the action area will be identified prior to dewatering of each creek. Biologists will survey beneath small boulders and areas where juvenile steelhead can hide to the maximum extent practicable in order to relocate steelhead out of the action area. In the event that some steelhead are missed by the biologists and stranded in the diversion area, some mortality may be expected.

Sites selected for relocating juvenile steelhead should have ample habitat, but relocated fish may compete with other fish for available resources such as food and habitat (Keeley 2003). Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas is expected to be temporary, because when the proposed action is finished steelhead will be able to redistribute to the action area. Once the proposed action is complete and the water diversion is removed, living space for juvenile steelhead will return to the dewatered action area on each creek. Fish relocation efforts are expected to significantly minimize impacts to juvenile steelhead by removing them from areas where they would have probably experienced high rates of injury and mortality.

Based on steelhead survey results provided by Stoeker Environmental (2002), as described in the environmental baseline, NMFS expects no more than 10 juvenile steelhead at each US-101 bridge will need to be relocated each year (or no more than a total of 30 juvenile steelhead at San Ysidro Creek and Romero Creek; no more than 20 juvenile steelhead at Arroyo Paredon Creek). Based on NMFS' experience and knowledge gained on similar projects in Santa Barbara County during the last several years, it is expected that 5 juvenile steelhead from each crossing may be injured or killed each year as a result of the proposed action (15 mortalities at Romero Creek and San Ysidro Creek; 10 mortalities at Arroyo Paredon Creek over the life of the proposed action).

Based on NMFS' general familiarity of steelhead abundance in southern California in general, and Santa Barbara County streams in particular, the anticipated number of juvenile steelhead that may be injured or killed as a result of the proposed action is likely to represent a small fraction of the overall watershed-specific populations and the entire Southern California DPS of endangered steelhead. Therefore, the effects of the relocation on steelhead are not expected to give rise to population-level effects.

Sedimentation and turbidity.—Although the action area will be dewatered during the time of construction, heavy equipment and people working within the stream channel will likely cause some increases in turbidity and release of fine sediments. Short-term increases in turbidity are anticipated to occur during water diversion and dewatering activities, during the first flush of the stream channel when it is re-watered, and during the first rainstorms which may mobilize disturbed sediments within the action area. This could affect water quality up to 350-feet downstream from the end of the diversion, and is a concern to NMFS because water quality is an important feature of steelhead critical habitat (Bjornn and Reiser 1991) and can affect steelhead by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior, reduce feeding efficiency, and decrease food availability (Cordone and Kelly 1961, Bjornn *et al.* 1977, Berg and Northcote 1985). Chronic elevated sedimentation and turbidity can also reduce salmonid growth rates (Crouse *et al.* 1981), increase salmonid plasma cortisol levels (Servizi and Martens 1992), cause salmonid mortality (Cordone and Kelly 1961, Sigler *et al.* 1984), and reduce the survival and emergence of salmonid eggs and fry (Chapman 1988). Even small pulses of turbid water can cause salmonids to be displaced from established territories to less suitable habitat and/or increase competition and predation, thereby reducing survival (Waters 1995).

However, NMFS does not expect chronic or acute effects owing to sedimentation or turbidity on steelhead in Arroyo Paredon Creek, Romero Creek, or San Ysidro Creek because increases in sedimentation and turbidity levels resulting from construction activities are expected to be minimal and temporary (*i.e.*, a few hours during dewatering, and a few hours after rewatering to about one day during the first storm). This is because the area where the construction will take place is relatively small and work within the streambed is limited. Also, much of the research mentioned above was carried out in a laboratory setting with turbidity levels significantly higher than those expected to result from construction activities. BMPs and sediment control devices deployed during construction (e.g., jute-netting, straw-fiber rolls, silt-fencing, hay bales, and settling basins) are expected to minimize the effects of sedimentation and turbidity on water quality. The success of these measures has been documented during other similar projects (M. Larson, CDFG, 2008, personal communication). Furthermore, increases in sedimentation and turbidity during the first wet-season rains are not expected to be significantly higher than background levels because streams within the Southern California steelhead DPS naturally have very high sediment concentrations during storm events (USACE 2004). NMFS expects that the disturbance within the stream channel will not result in increased sedimentation within the three creeks in the long term. For these reasons, NMFS does not expect acute turbidity related effects on steelhead.

Pile installation.—Available information indicates that fish may be injured or killed when exposed to elevated levels of underwater sound pressure generated from driving steel piles with

impact hammers (Hastings and Popper 2005). Injuries to fish include hemorrhaging and the rupture of internal organs, including the swimbladder and kidney. Death can be instantaneous, occur within minutes after exposure, or occur several days later. Other sustained injuries may not lead to death but could result in reduced fitness, ability to forage, increase predation risk, impact sensory functions, and disrupt migration and behavior patterns. Therefore, the potential impact of pile driving on steelhead at Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek is of concern.

The Fisheries Hydroacoustic Working Group (FHWG[2]), uses a duel metric threshold criterion to correlate physical injury to fish exposed to underwater producing pile driving with impact hammers. Specifically, this includes single strike peak sound pressure level (SPL) of 206 decibels (dB) and a cumulative sound exposure level (SEL) of 187 dB for fish two grams or greater, or 183 dB for fish less than 2 grams. If either threshold is exceeded, then physical injury is assumed to occur. The work area within each creek will be dewatered each construction season and therefore none of the piles will be installed in or near surface waters. The sound energy originating from the ground as a result of pile driving activities will be dominated by low frequencies that do not propagate efficiently through water, particularly shallow water (less than 3 feet deep) existing beyond the dewatered work area. At a distance of 30-feet from the driven pile, peak SPL is expected to be between 172 dB and 181 dB and the SEL to be between 147 dB and 158 dB. These levels are below those that cause injury to juvenile steelhead. To further minimize the effects of pile driving on steelhead, pile driving is to occur during the dry season (June 1 and October 31) and sound attenuation devices (e.g., cushion blocks) will be implemented (a 10 dB reduction in sound is assumed from the proposed attenuation). Therefore, no adverse effects to steelhead are expected as a result of pile driving associated with the proposed action.

B. Effects on Critical Habitat

Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek are designated critical habitat. The proposed action will temporarily impact approximately 0.35 acres of critical habitat (0.16 acres at Arroyo Predon Creek; 0.08 acres at Romero Creek; 0.11 acres at San Ysidro Creek). PCE's of critical habitat for steelhead in the action area include sites for migration and some marginal rearing opportunities. The potential effects of the proposed action on designated habitat for the species include the temporary loss of aquatic habitat during dewatering, disturbance of the streambed and banks, and removal of riparian vegetation. The temporary loss of channel and associated streambanks (within the dewatered area) for a 5-month period for up to 3 construction seasons is not expected to permanently adversely affect essential physical or biological features associated with steelhead critical habitat. These features will return to their current condition or be improved upon completion of the proposed action. Therefore, the value of critical habitat for steelhead will not be appreciably reduced in the action area beyond the temporary effects noted here.

[2] Member agencies of the FHWG include Caltrans, Federal Highways Administration, NMFS (Northwest and Southwest Regions), United States Fish and Wildlife Service, Oregon and Washington Departments of Transportation.

Manipulation and disturbance of the streambed can result in changes to channel morphology and hydraulic conditions that may create barriers or impediments to steelhead migration. Bridge construction and removal will result in minor changes to habitat space, as the replacement bridges will be constructed mostly within the existing bridge footprint and alignment. After construction is complete, the channels will be wider and have added roughness. The existing rearing conditions are expected to remain the same because the proposed grading of the stream bed will retain the existing substrate size, slope and thalweg. However, the final design and grading plans have not been submitted and there are some uncertainties as to how the final project conditions at each site will function, hence there exists a need to review the final design and grading plans. Hydraulic computations and a one-dimensional (1-D) HECRAS model were used to analyze potential post-project hydraulic conditions through each individual project reach. The results of the model showed that the proposed action will likely improve fish passage at each creek by decreasing velocities at peak flows. However, there are limits to a 1-D model and the bathymetry data used to develop each model may not reflect the streambed characteristics upon completion of the proposed action. Therefore, monitoring of each site following implementation of the proposed action is warranted and would assess whether a fish passage problem exists or if the proposed action is functioning as designed. In this regard, this effects assessment assumes the following: (1) Caltrans will continue to coordinate with NMFS on details regarding the final design and grading plans, including submission of the subject plans to NMFS for review and comment, and (2) Caltrans will revise the design or grading plan according to NMFS guidance when such revisions are necessary to ensure the proposed habitat and fish passage conditions are attained. Based on these assumptions, the proposed action is not expected to appreciably reduce the functional value of the action areas as sites of freshwater migration or rearing.

Riparian vegetation provides numerous functional values that may benefit migrating, rearing, or spawning steelhead. Riparian vegetation enhances stream habitat by providing shade, cover, and shelter for stream fish in the form of overhanging branches, rootwads, undercut banks, and scour pools (Wesche *et al*. 1987, Platts 1991, Wang *et al*. 1997, Bilby and Bisson 1998, Naiman *et al*. 2000). Riparian zones enhance water quality by reducing the input of fine sediments and pollutants into streams (Karr and Schlosser 1978, Lowrance *et al.* 1985). Riparian vegetation also provides a source of drift forage for juvenile steelhead (Wesche *et al.* 1987). The proposed action is expected to result in the temporary degradation of these elements of critical habitat within discrete areas of Arroyo Paredon Creek and San Ysidro Creek due to a loss of some shade and cover where riparian vegetation is currently present along the north and south banks of the active channels. Caltrans anticipates construction of the proposed action will impact 11-arroyo willows at Arroyo Paredon Creek and 3-coast live oaks, 2-Monterey pine trees, and 1-Blue Gum eucalyptus at San Ysidro Creek. Indirect effects associated with the removal of riparian vegetation can result in increased water temperatures (Mitchell 1999, Opperman and Merenlender 2004) and decreased water quality (Lowrance *et al*. 1985, Welsch 1991) attributable to a loss of shade and cover over the active channel. However, the loss of trees and vegetation as a result of the proposed action are expected to be temporary, because native riparian vegetation will be replanted throughout the disturbed areas to minimize impacts from construction. Until the action area is recovered, riparian vegetation located upstream and downstream of the affected reach is expected to help maintain stream temperatures and provide cover for steelhead during the interim conditions. Based on NMFS' experience observing the response of riparian vegetation to human-made disturbances (M. McGoogan, NMFS 2013,

personal communication), the riparian zone is expected to recover from the proposed action 1- to 2-years following the completion of construction. Overall, the amount and characteristics of the existing riparian vegetation that will be affected by the proposed action is not expected to diminish the overall functional value of the migratory corridor and freshwater rearing sites within the action area.

F. Summary of Effects

The effects of the proposed action on steelhead and critical habitat are: (1) the temporary loss and alteration of aquatic habitat for the approximate 5-month period of project construction for up to 3 construction seasons (June 1 to October 31); (2) the temporary harassment, capture and collection of steelhead during water diversion and fish relocation and temporary obstruction of upstream migration through the action area; (3) the temporary harassment of steelhead during pile installation; (4) the re-grading of the stream bed; and, (5) alteration and temporary (1 to 2 year) reduction in riparian habitat. NMFS expects the effects to steelhead from disrupting migration and the loss and alteration of aquatic habitat during water diversion will be temporary and discountable because (1) migration through the action area by steelhead will be unimpaired after the water diversion is removed and the proposed action is complete; (2) continued use of aquatic habitat by steelhead in areas adjacent to the dewatered area of the creek will not be affected during the proposed action; and (3) steelhead will be able to use the aquatic habitat throughout the action area after the proposed action is complete. NMFS anticipates that pile driving effects within 30-feet from the source will be below the levels known to cause harm or mortality to fish, and, therefore, are not expected to adversely affect steelhead. With regard to critical habitat, the impacts to the riparian zone are expected to be temporary and confined to discrete areas, and the revegetation plan is expected to create a functioning riparian zone that provides cover and shelter for steelhead within the action area of Arroyo Paredon Creek and San Ysidro Creek. The impacts from disturbing the streambed are not expected to adversely affect the quality or quantity of aquatic habitat, or habitat-forming geomorphic processes downstream of the action area; rather the proposed action is expected to ultimately improve steelhead passage conditions. Maintained access to spawning and rearing habitat upstream of the action area on Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek as well as the enhancement of passage conditions within the action areas are expected to favor the viability of the endangered Southern California DPS of steelhead and not reduce the conservation value of critical habitat for the species.

VI. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local or private actions that are reasonably certain to occur in the action area considered in this Biological Opinion. NMFS is generally familiar with activities occurring in the action area, and at this time is unaware of such actions that would be reasonably certain to occur. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Endangered Species Act. Consequently, NMFS believes no cumulative effect, beyond the continuing effects of present land uses, is likely.

VII. CONCLUSION

After reviewing the best scientific and commercial information available, the status of the endangered Southern California DPS of steelhead, the environmental baseline for the action area, expected effects of the proposed action, and cumulative effects, NMFS concludes the proposed action is not likely to jeopardize the continued existence of the Federally endangered Southern California DPS of steelhead, or destroy or adversely modify critical habitat for this species.

VIII. INCIDENTAL TAKE STATEMENT

Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS to include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by Caltrans for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this incidental take statement. If Caltrans (1) fails to assume and implement the terms and conditions or (2) fails to adhere to the terms and conditions of this incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

NMFS anticipates the proposed action that will occur in Arroyo Paredon Creek, Romero Creek, and San Ysidro Creek, Santa Barbara County, California, may result in the incidental take of steelhead at each location. Incidental take would be in the form of harassment or harm due to the water diversions, and steelhead capture or collection due to relocation procedures, if such procedures become necessary. Based on field surveys of the action area, and the depth, size, and amount of cover in the aquatic habitat immediately within the action area, NMFS anticipates the following amount of incidental take: All steelhead in the action area, anticipated to be no more than 10 juveniles that are captured or harassed during each of three construction seasons (no more than 30 individuals at Romero Creek and San Ysidro Creek over 3 construction seasons; no more than 20 individuals at Arroyo Paredon Creek over 2 construction seasons). No more than 5 juvenile steelhead are expected to be injured or killed at any single action area (total of 15 individuals) as a result of dewatering the action areas and relocating this species. No other incidental take of steelhead is anticipated as a result of the proposed action. The accompanying

Biological Opinion does not anticipate any form of take that is not incidental to the proposed action.

B. Effect of Take

In the Biological Opinion, NMFS concludes that the anticipated level of take associated with the proposed action is not likely to result in jeopardy to the endangered Southern California DPS of steelhead or destroy or adversely modify designated critical habitat for this species.

C. Reasonable and Prudent Measures

NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize and monitor incidental take of steelhead:

1. Minimize harm and mortality to steelhead from fish relocation and pile driving activities.

2. Minimize the impacts to steelhead and critical habitat from construction activities.

3. Minimize the amount and extent of sediment-related effects on the quality and quantity of instream habitat within the action area.

4. Minimize the amount and extent of temporary and permanent changes in the quality and quantity of instream and riparian habitat within the action area.

D. Terms and Conditions

In order to be exempt from any prohibitions of section 9 of the ESA, Caltrans must ensure that it complies with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary:

1. The following terms and conditions implement reasonable and prudent measure No. 1.

   A. Caltrans shall retain a biologist with expertise in the areas of resident or anadromous salmonid biology and ecology; fish/habitat relationships; biological monitoring; and, handling, collecting, and relocating salmonid species.

   B. Caltrans' biological monitor shall oversee the construction site during implementation and removal of the water diversion for removing any steelhead. The biologist shall capture steelhead in the isolated wetted work areas and then relocate steelhead to suitable habitat upstream or downstream. One or more of the following methods shall be used to capture steelhead: seine, dip net, throw net, minnow trap, or by hand. Electrofishing is prohibited.

   C. Caltrans' biological monitor shall provide a written fish relocation report to NMFS within 30 calendar days following completion of the proposed action. The report shall include:

1) the number and size of any and all steelhead relocated during the proposed action or fish relocation; 2) the date and time of the collection and relocation site; 3) a description of any problem encountered during the proposed action or when implementing terms and conditions; and, 4) any effect of the proposed action on steelhead that was not previously considered. The report should be sent to Jay Ogawa, NMFS, 501 W. Ocean Blvd., Suite 4200, Long Beach, California 90802-4213.

D. Caltrans' biologist shall contact NMFS (Jay Ogawa, 562-980-4061) immediately if one or more steelhead are found dead or injured. The purpose of the contact shall be to review the activities resulting in take and to determine if additional protective measures are required. All steelhead mortalities shall be retained, placed in an appropriate-sized sealable plastic bag, labeled with the date and location of collection, fork length measured, weight, and be frozen as soon as possible. Frozen samples shall be retained by the biologist until specific instructions are provided by NMFS. Subsequent notification must also be made in writing to Jay Ogawa, NMFS, 501 W. Ocean Blvd., Suite 4200, Long Beach, California 90802-4213 within five days of noting dead or injured steelhead. The written notification shall include: 1) the date, time, and location of the carcass or injured specimen; 2) a color photograph; 3) cause of injury or death; and, 4) name and affiliation of the person who found the specimen.

E. Caltrans' biological monitor shall monitor sound levels during pile driving activities to ensure that levels at the streams edge and underwater are not higher than the anticipated peak SPL and cumulative SEL described in the biological assessment. Pile driving shall be monitored at a minimum of 3 locations, approximately 30-feet away from the pile being driven and immediately upstream and downstream of the dewatered work area. If sound levels at the streams edge or underwater are higher than those proposed, the biologist shall be empowered to halt work and will contact NMFS (Jay Ogawa, 562-980-4061) immediately and prior to continuing pile driving activities.

2. The following terms and conditions implement reasonable and prudent measure No. 2.

A. Caltrans shall provide the final design and grading plans of the proposed action to NMFS within 14 calendar days prior to the beginning of construction so NMFS may review and provide comments to increase the likelihood that the proposed fish passage and habitat conditions at each site will be incorporated into the completed project. Caltrans shall revise and resubmit the plans to NMFS within 30 calendar days of receiving NMFS comments. Caltrans must receive final NMFS agreement with the design and grading plans prior to implementation of the proposed action. Plans shall be sent to Jay Ogawa, NMFS, 501 W. Ocean Blvd., Suite 4200, Long Beach, California 90802-4213.

B. Caltrans' biological monitor shall monitor all construction activities, instream habitat, and performance of sediment control devices for the purpose of identifying and reconciling any condition that could adversely affect steelhead or their habitat. The biologist shall be empowered to halt work activity and to recommend measures for avoiding adverse effects to steelhead and their habitat. The biological monitor shall contact NMFS (Jay Ogawa, 562-980-4061) immediately for further guidance if any

unanticipated problem, which could have an adverse effect on steelhead or critical habitat, occurs. Caltrans' biological monitor shall provide photographs of the graded section of stream bed within the action area and vicinity within 30 calendar days following completion of the proposed action, to ensure proposed methods of construction were implemented.

A. Any heavy equipment used in or near the creek channel shall be removed from the channel at the end of each workday. When feasible work shall be performed from the roadway. All heavy equipment shall be checked for leaks of oil, gas, hydraulic fluid and any other pollutant which could impact water quality and instream habitat each workday prior to being deployed into the creek. Such leaks shall be controlled for the purpose of avoiding water-quality impacts to surface water.

B. All materials and debris related to bridge demolition and construction shall be removed from the creek channel bed and riparian zone as soon as possible and prior to November 1.

3. The following terms and conditions implements reasonable and prudent measure No. 3.

A. Erosion control or sediment detention devices (*e.g.*, settling basin) shall be installed prior to the time of construction activities and incorporated into Caltrans' maintenance activities. These devices shall be in place during construction activities for the purpose of minimizing sediment and sediment slurry input into flowing water. Sediment collected in the devices shall be disposed of off-site and will not be allowed to reenter the creek channel.

4. The following terms and conditions implements reasonable and prudent measure No. 4.

A. Caltrans shall obtain a topographical survey of the stream channel at each site within 30 calendar days following implementation of the proposed action and submit the results as soon as they become available. The survey results shall be sent to Jay Ogawa, NMFS, 501 W. Ocean Blvd., Suite 4200, Long Beach, California 90802-4213. The survey shall start slightly upstream of the water diversion at each crossing and end slightly downstream of the water diversion. The survey shall possess sufficient detail to provide channel profile and cross-sections for the purpose of ensuring the proposed action does not result in reduced fish-passage conditions or degradation of existing aquatic habitat.

B. Caltrans or their authorized biologist shall provide a revegetation report that is to include a description of the locations seeded or planted, the area revegetated, proposed methods to monitor and maintain the revegetated area, and criteria used to determine the success of the plantings. The revegetation report shall be sent to Jay Ogawa, NMFS, 501 W. Ocean Blvd., Suite 4200, Long Beach, California 90802-4213, within 30 working days following completion of the proposed action.

X. REINITIATION OF CONSULTATION

This concludes formal consultation on the actions outlined in the project proposal. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

XI. LITERATURE CITED

Barnhart, R. B. 1991. Steelhead (*Oncorhynchus mykiss*). Pages 324 to 336 *in* J. Stolz and J. Schnell (eds.) Trout. Stackpole Books, Harrisburg, PA.

Berg, L., and T. G. Northcote. 1985. Changes in territorial, gill-flaring, and feeding behavior in juvenile coho salmon (*Oncorhynchus kisutch*) following short-term pulses of suspended sediment. Canadian Journal of Fisheries and Aquatic Sciences 42: 1410–1417.

Berger, J. 1990. Persistence of different-sized populations: an empirical assessment of rapid extinctions in bighorn sheep. Conservation Biology 4: 91-98.

Bilby, R. E. and P. A. Bisson. 1998. Function and distribution of large woody debris. 324–346. in Naiman RJ, Bilby RE, eds. River Ecology and Management: Lessons From the Pacific Coastal Ecoregion New York: Springer-Verlag.

Bjornn, T. C., M. A. Brusven, M. P. Molnau, J. H. Milligan, R. A. Klamt, E. Chacho, and C. Schaye. 1977. Transport of granitic sediment in streams and its effect on insects and fish. University of Idaho, Forest, Wildlife, and Range Experiment Station, Bulletin 17, Moscow.

Bjornn, T. C., and D. W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 83 to 138 in W. R. Meehan (ed.) Influences of Forest and Rangeland Management on Salmonid Fishes and their Habitats. American Fisheries Society Special Publication 19.

Boughton, D. A., H. Fish, K. Pipal, J. Goin, F. Watson, J. Casagrande, J. Casagrande, and M. Stoecker. 2005. Contraction of the southern range limit for anadromous *Oncorhynchus mykiss*. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-380.

Boughton, D. A., P. B. Adams, E. Anderson, C. Fusaro, E. Keller, E. Kelley, L. Lentsch, J. Nielsen, K. Perry, H. Regan, J. Smith, C. Swift, L. Thompson, and F. Watson. 2006. Steelhead of the south-central/southern California coast: population characterization for recovery planning. NOAA Technical Memorandum, NOAA-TM-NMFS-SWFSC-394.

Busby, P. J., T. C. Wainwright, G. J. Bryant, L. J. Lierheimer, R. S. Waples, F. W. Waknitz, and I. V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. U. S. Department of Commerce, NOAA Technical Memorandum. NMFS-NWFSC-27, 261 pp.

Caltrans. 2010. South Coast HOV Project. Water Quality Report.

Caltrans. 2013. South Coast 101 High Occupancy Vehicle (HOV) Project. Biological Assessment. February 2013.

Campbell, R. N. B., and D. Scott. 1984. The determination of minimum discharge for 0+ brown trout (*Salmo trutta L.*) using a velocity response. New Zealand Journal of Marine and Freshwater Research. 18: 1-11.

Cayan, D. R., S. Kammerdiener, M. D. Dettinger, J. M. Caprio, and D. H. Peterson. 2001. Changes in the onset of spring in the western United States. Bulletin of the American Meteorological Society. 82(3): 399-415.

Chapman, D. W. 1988. Critical review of variables used to define effects of fines in redds of large salmonids. Transactions of the American Fisheries Society 117: 1-21.

Clothier, W. D. 1953. Fish loss and movement in irrigation diversions from the west Gallatin River, Montana. Journal of Wildlife Management 17: 144-158.

Clothier, W. D. 1954. Effect of water reductions on fish movement in irrigation diversions. Journal of Wildlife Management 18: 150-160

Cordone, A. J., and D. W. Kelley. 1961. The influences of inorganic sediment on the aquatic life of streams. California Fish and Game 47: 189–228.

Crouse, M.R., C.A. Callahan, K.W. Malueg, and S.E. Dominguez. 1981. Effects of fine sediments on growth of juvenile coho salmon in laboratory streams. Transactions of the American Fisheries Society 110: 281-286.

Cushman, R. M. 1985. Review of ecological effects of rapidly varying flows downstream from hydroelectric facilities. North American Journal of Fisheries Management 5: 330-339.

Fukushima, L. and E.W. Lesh. 1998. Adult and juvenile anadromous salmonid migration timing in California streams. California Fish and Game 84: 133-145.

Good, T. P., R. S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS NWFSC-66, 598 p.

Harvey, B. C. 1986. Effects of suction gold dredging on fish and invertebrates in two California streams. North American Journal of Fisheries Management 6: 401–409.

Hastings, M. C., and A. N. Popper. 2005. Effects of Sound on Fish. Prepared for the California Department of Transportation. January 28, 2005.

Karl, T. R., J. M. Melillo, and T. C. Peterson (eds.). 2009. *Global Climate Change Impacts in the United States.* Cambridge University Press.

Karr, J. R., and I. J. Schlosser. 1978. Water resources and the land-water interface. Science 2001:229-234.

Keeley, E. R. 2003. An experimental analysis of self-thinning in juvenile steelhead trout. Oikos 102:543-550.

Kraft, M. E. 1972. Effects of controlled flow reduction on a trout stream. Journal of the Fisheries Research Board of Canada 29(10): 1405-1411.

Lowrance, R., R. Leonard, and J. Sheridan. 1985. Managing riparian ecosystems to control nonpoint pollution. Journal of Soil and Water Conservation 40:87-91.

Matthews, K. R., and N. H. Berg. 1997. Rainbow trout responses to water temperature and dissolved oxygen stress in two Southern California stream pools. Journal of Fish Biology 50: 50-67.

McCarty, J. P. 2001. Ecological consequences of recent climate change. Conservation Biology. 15(2): 320-331.

McElhany, P., M. H. Ruckelshaus, M. J. Ford, T. C. Wainwright, and E. P. Bjorkstedt. 2000. Viable salmonid populations and the recovery of evolutionarily significant units. NOAA Technical Memorandum, NMFS-NWFSC-42.

Meehan, W. R., and T. C. Bjornn. 1991. Salmonid distribution and life histories. Pages 47-82 *in* W. R. Meehan (ed.) Influences of Forest and Rangeland Management on Salmonid Fishes and their Habitats. American Fisheries Society Special Publication 19.

Mitchell, S. 1999. A simple model for estimating mean monthly stream temperatures after riparian canopy removal. Environmental Management 24: 77-83.

Moyle, P. B. 2002. Inland Fishes of California. Revised and Expanded. Berkeley: University of California Press. 502 pp.

Naiman, R. J., R. E. Bilby, and P. Bisson. 2000. Riparian ecology and management in the Pacific coastal rain forest. BioScience 50:996–1011.

National Marine Fisheries Service (NMFS). 1997. Endangered and threatened species: listing of several evolutionary significant units (ESUs) of West Coast steelhead. Federal Register [Docket 960730210-7193-02, 18 August 1997] 62(159): 43937-43953.

National Marine Fisheries Service (NMFS). 2006. Endangered and threatened species: final listing determinations for 10 distinct population segments of west coast steelhead. Federal Register 71(3): 834-862.

National Marine Fisheries Service (NMFS). 2011. South-Central/Southern California Coast Steelhead Recovery Planning Domain 5-Year Review: Summary and Evaluation of *Southern California Coast Steelhead Distinct Population Segment.* Southwest Region, Long Beach, California.

National Marine Fisheries Service (NMFS). 2012. Southern California Steelhead Recovery Plan. Southwest Region, Protected Resources Division, Long Beach, California.

Nielsen, J. L., T. E. Lisle, and V. Ozaki. 1994. Thermally stratified pools and their use by steelhead in northern California streams. Transactions of the American Fisheries Society 123: 613-626.

Oberhoff, D and C. Cesena. 2002. Endangered species biological assessment for the Arroyo Parida (Paredon) Creek/Highway 192 bridge replacement (05-SB-192-KP 24.9). Cal Trans District V, Environmental Planneing Branch, 50 Higuera Street, San Luis Obispo, California.

Opperman, J. and A. M. Merenlender. 2004. The effectiveness of riparian restoration for improving instream fish habitat in four hardwood-dominated California streams. North American Journal of Fisheries Management 24(3):822-834.

Pimm, S. L., H. L. Jones, and J. Diamond. 1988. One the risk of extinction. American Naturalist 132: 757-785.

Platts, W. S. 1991. Livestock grazing. Pages 389-423 in W. R. Meehan (ed.) Influences of Forest and Rangeland Management on Salmonid Fishes and their Habitats. American Fisheries Society Special Publication 19.

PRBO Conservation Science. 2011. *Projected Effects of Climate Change in California Ecoregional Summaries Emphasizing Consequences for Wildlife.* PRBO Conservation Science, Petaluma, California.

Primack, R. 2004. A primer of conservation biology, 3rd edition. Sinauer Associates, Inc., Sunderland, MA.

Roper, B. B., D. L. Scarnecchia, and T. J. La Marr. 1994. Summer distribution of and habitat use by chinook salmon and steelhead within a major basin of the South Umpqua River, Oregon. Transactions of the American Fisheries Society 123: 298-308.

Servizi, J. A., and D. W. Martens. 1992. Sublethal responses of coho salmon (*Oncorhynchus kisutch*) to suspended sediments. Canadian Journal of Fisheries and Aquatic Sciences 49:1389-1395.

Shapovalov, L., and A. C. Taft. 1954. The life histories of the steelhead rainbow trout *(Salmo gairdneri gairdneri*) and silver salmon (*Oncorhynchus kisutch*) with special reference to Waddell Creek, California, and recommendations regarding their management. State of California, Department of Fish and Game, Fish Bulletin 98.

Sigler, J. W., T. C. Bjornn, and F. H. Everest. 1984. Effects of chronic turbidity on density and growth of steelhead and coho salmon. Transactions of the American Fisheries Society 113: 142-150.

Stoeker, M. W. 2002. Steelhead assessment and recovery opportunities in southern Santa Barbara County, California. Conception Coast Project, Santa Barbara, California.

Spence, B.C., G.A. Lomnicky, R.M. Hughes and R. P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. Funded jointly by the U.S. EPA, U.S. Fish and Wildlife Service and National Marine Fisheries Service. TR-4501-96-6057. Man Tech Environmental Research Services Corp., Corvallis, OR.

Thomas, V. G. 1985. Experimentally determined impacts of a small, suction gold dredge on a Montana stream. North American Journal of Fisheries Management 5: 480-488.

U. S. Army Corps of Engineers. 2004. The Matilija Dam Ecosystem Restoration Feasibility Study. Final Draft Environmental Impact Statement. September 2004.

Wang, L., J. Lyons, P. Kanehl, and R. Gatti. 1997. Influences of watershed land use on habitat quality and biotic integrity in Wisconsin streams. Fisheries. 22:6-12

Waters, T. F. 1995. Sediment in Streams: Sources, Biological Effects, and Control. American Fisheries Society Monograph 7.

Welsch, D. J. 1991. Riparian Forest Buffers; Function and design for protection and enhancement of water resources. USDA publication NA-PR-07-91

Wesche, T.A., C.M. Goertler, and C.B. Frye. 1987. Contribution of riparian vegetation to trout cover in small streams. North American Journal of Fisheries Management 7: 151-153.

Westerling, A. L. and B. P. Bryant. 2008. Climate change and wildfire in California. Climate Change. 87: 231-249.

Williams, T. H., S. T. Lindley, B. C. Spence, and D. Boughton. 2011. *Status Review Update for Pacific Salmon and Steelhead Listed Under the Endangered Species Act: Southwest Region.* National Marine Fisheries Service, Southwest Fisheries Science Center, Fisheries Ecology Division.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
VENTURA FIELD OFFICE
2151 ALESSANDRO DRIVE, SUITE 110
VENTURA, CALIFORNIA 93001

August 29, 2012

REPLY TO
ATTENTION OF
Regulatory Division

Morgan Robertson
Department of Transportation
District 5
50 Higuera Street
San Luis Obispo, California 93401-5415

SUBJECT: Approved Jurisdictional Determination

Dear Ms. Robertson:

Reference is made to your request (File No. SPL-2012-00557-TS) dated July 19, 2012, for an approved Department of the Army jurisdictional determination (AJD) for the Caltrans South Coast Highway 101 HOV Project, located in the cities of Carpinteria and Santa Barbara, Santa Barbara County, California.

As you may know, the Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, then a permit is required. The first test determines whether or not the proposed project is located in a water of the United States (i.e., it is within the Corps' geographic jurisdiction). The second test determines whether or not the proposed project is a regulated activity under section 10 of the River and Harbor Act or section 404 of the Clean Water Act. As part of the evaluation process, pertaining to the first test only, we have made the jurisdictional determination below.

Based on available information, we have determined there are jurisdictional waters of the United States on the project site, as well as non-jurisdictional aquatic resources in the locations described on the map sheets submitted with your original request. The basis for our determination for each location can be found within the enclosed JD form(s). Specifically we have determined the following:

Non-Jurisdictional Waters: OW1, 9, 12, 32, 33, 39, 41, 42, 45, 47, 48, 51, 57, 59, 60, 62, 67, 68;

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Jurisdictional Relatively Permanent Waters (RPW): lower Franklin Creek watershed (OW14, 15, 16, 17 and AC2); lower Santa Monica Creek watershed (OW18, 21, 22, 23); OW29; lower Arroyo Parida Creek watershed - Carpinteria (OW34, 35, 36), lower Toro Creek watershed (OW43, 44 and AC16), lower Greenwell Creek (OW 52, 54), lower Romero Creek watershed (OW69, 70), lower San Ysidro Creek watershed (OW71, 72), lower Oak Creek watershed (OW73, 74);

Jurisdictional Traditional Navigable Waters (TNW) subject to the ebb and flow of the tide: lower Santa Monica Creek watershed (OW27 and AC5, 6, 10 and 11).

This letter contains an approved jurisdictional determination for the Caltrans South Coast Highway 101 HOV Project. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet (Appendix A) and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Corps South Pacific Division Office address shown on the RFA enclosure.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. Part 331.5, and that it has been received by the Division Office within 60 days of the date on the NAP. Should you decide to submit an RFA form, it must be received at the above address by **October 29, 2012**. It is not necessary to submit an RFA form to the Division office if you do not object to the decision in this letter.

This jurisdictional determination is valid for five (5) years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you wish to submit new information regarding the approved jurisdictional determination for this site, please submit this information to Theresa Stevens, Ph.D. at the letterhead address by **October 29, 2012.** The Corps will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. A revised or reissued jurisdictional determination can be appealed as described above.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular project site identified in your request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

If you have any questions, please contact Theresa Stevens, Ph.D. of my staff at 805-585-2146 or via e-mail at theresa.stevens@usace.army.mil.

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Please comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

David J. Castanon
Chief, Regulatory Division

Enclosures