UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4250

February 28, 2019 **Refer to NMFS No:** WCR-2018-11011

Jim Walth
Senior Biologist
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401-5415

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for the San Jose Creek Bridge Replacement at SR-217 in Santa Barbara County (EA: 05-1C3600)

Dear Mr. Walth:

Thank you for your letter of October 30, 2018, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the San Jose Creek Bridge Replacement Project at State Route 217, Santa Barbara County. The California Department of Transportation (Caltrans) is the lead federal agency as part of its NEPA assignment of federal responsibilities by the Federal Highway Administration (FHWA), effective March 20, 2017, and pursuant to 23 USC 326. Enclosed with this letter is NMFS's biological opinion for the subject proposed action. This biological opinion addresses the effects of the proposed action on the federally endangered Southern California (SC) Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) and its designated critical habitat in accordance with section (7)(a)(2) of the ESA.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1855(b)) for this action. However, after reviewing the proposed action, we concluded that it would not adversely affect EFH, therefore, no EFH consultation is required.

The biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of the endangered SC DPS of steelhead, or destroy or adversely modify designated critical habitat for this species. NMFS believes the proposed action is likely to result in incidental take of endangered steelhead and, therefore, the attached incidental take statement includes the amount and extent of anticipated incidental take with reasonable and prudent measures and non-discretionary terms and conditions that are necessary and appropriate to minimize and monitor incidental take of endangered steelhead.

Please contact Jess Adams in Long Beach at (562) 980-4013 or jessica.adams@noaa.gov if you have a question concerning this consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Mindy Trask, Caltrans, District 5 (Mindy.Trask@dot.ca.gov)
ARN File # 151422WCR2018CC00207

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion

San Jose Creek Bridge Replacement Project on Highway 217
NMFS Consultation Number: WCR-2018-11011

Action Agency: California Department of Transportation

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Southern California steelhead (*Oncorhynchus mykiss*)	Endangered	Yes	No	Yes	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region.

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office
Date: February 28, 2019

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1 INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

NOAA's National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR 402.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available through NMFS' Public Consultation Tracking System [*https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts*]. A complete record of this consultation is on file at NMFS's California Coastal Office, Southern California Branch in Long Beach, California.

1.2 Consultation History

On October 30, 2018, NMFS received a written request for formal consultation under Section 7 of the U.S. Endangered Species Act (ESA) from the California Department of Transportation (Caltrans). Caltrans's request concerns the San Jose Creek Bridge Replacement Project (proposed action) at State Route 217 in Santa Barbara County and potential effects of the proposed action on endangered steelhead (*Oncorhynchus mykiss*) and designated critical habitat. After reviewing Caltrans's request and biological assessment (BA), including supplemental hydraulics study and fish passage analysis, NMFS determined the information was sufficient to initiate consultation on October 30, 2018. On November 15, 2018, NMFS sent a letter requesting clarification on an aspect of the proposed action. The consultation was held in abeyance for 38 days due to a lapse in appropriations and resulting government shutdown. Consultation resumed on January 28, 2019. On January 29, 2019, a consultation extension of 90 days was mutually agreed upon. On February 4, 2019, Caltrans provided the clarifying information requested in addition to modifications to the proposed action.

1.3 Proposed Federal Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02).

1.3.1 Overview of the Proposed Action

Caltrans will replace the structurally deficient bridge over San Jose Creek (Bridge #51-0217) at State Route (SR)-217 with a two-span, precast, pre-stressed bridge. Both abutments will be located outside of the streambanks and the center pier will be within the ordinary high water mark (OHWM) near the east bank. The new structure will result in a footprint increase of 18 ft^2 within the OHWM. Construction of the proposed action is expected to be completed within two seasons beginning in 2022 with all instream work occurring between June 1 and October 31 in a given year. Best-management practices (BMP) are incorporated into the proposed action and

will be implemented when bridge-construction activities are undertaken. Caltrans is the lead federal agency per the Memorandum of Understanding 23 USC 326 with the Federal Highway Administration.

1.3.2 Proposed Activities to Prepare the Work Area for Construction

To prepare for construction in dry conditions, the work area will be temporarily isolated from surface flow and any steelhead within the affected area will be relocated. A clear water diversion will most likely be used via sheet piles, water-filled geotextile, or a cofferdam. The diversion will be constructed across the eastern part of the channel immediately upstream of the proposed bridge and will remain in place for the duration of the construction season. The partial diversion will push the active part of the stream about 10 feet toward the west abutment. The cofferdam will start approximately 50 feet upstream of the most upstream column and 50 feet downstream of the most downstream column. Removal of additional water will be done with low-horsepower pumps and screened hoses. Water will be pumped into a temporary sediment basin, adjacent uplands, or a Baker-tank system to capture water-born sediment before returning clear water to the stream.

Prior to the diversion of surface water, NMFS approved biologists will prepare a fish-handling plan and capture and relocate all fish in the work area including steelhead to a predetermined location within 24 hours of construction beginning. Fish will be herded out of the area to be dewatered via seines and block nets if possible, otherwise dip nets will be used to capture steelhead. They will be relocated the shortest distance possible to suitable habitat. The nets will have a mesh size no greater than 1/8 inch. Continual monitoring will occur during all in-water activities and all steelhead in dewatered areas will be captured and relocated from residual wetted areas. Detailed records of relocated steelhead will be kept and reported to NMFS. Additional measures will be undertaken to minimize take of steelhead and adverse effects to aquatic habitat during the dewatering process and subsequent construction activities. If pumps are incorporated into the dewatering process, all intakes will be screened with no larger than 3/32-inch (2.38 mm) wire mesh, measured diagonally, to prevent steelhead from entering the pump system. Pumped water will be directed through a silt-filtration bag and/or settling basin before re-entering the stream. Pumps will be checked at least weekly by a qualified biologist to ensure a dry work environment and minimize adverse effects to steelhead and their habitat. Upon completion of the proposed action and construction activities each season, barriers to surface flow will be removed and stream contours will be restored.

1.3.3 Proposed Construction Activities

A temporary work platform or trestle will be used for bridge construction. If a trestle is required, 12-inch diameter steel pipe piles will be installed with 2 adjacent to shore and 16 in the water channel. The piles would be vibrated and rotated in, then proofed with a hammer, up to 200 strikes a day. There is a possibility that dewatering may not be feasible during instillation of the trestle due to the amount of water and construction schedule. The peak sound pressure would be 177 dB and the distance to the cumulative SEL threshold for fish $\geq$ 2g is 2 m. A temporary pedestrian-bike path will also be constructed and maintained for the duration of construction.

After the work area is dewatered, Caltrans will begin demolishing half of the existing bridge. If the stream diversion does not include the existing columns in the deepest part of the channel, work areas around each column will be dewatered with temporary casings. After removal, a new two-span, precast, pre-stressed, wide flange, girder bridge will be installed. Cast-in-drill-hole (CIDH) piles will be installed along the middle pier of the bridge and the abutments. Steel casings will be used around each new CIDH pile to prevent wet concrete from leaking into the stream. The casings will be installed using a vibratory or rotating method and an impact pile driver will not be needed. Retaining walls will be constructed as extensions of the proposed wingwalls along the bicycle/pedestrian path to minimize the need for fill material in San Jose Creek and will require pile driving of 12-16 inch precast concrete piles located 60 feet from the creek on the south side of SR-217. The distance from the water and content of the substrate are expected to dissipate any adverse hydroacoustic effects to steelhead. During the second season, the other half of the bridge will be removed and replaced. The following measures will be undertaken to minimize adverse effects to aquatic habitat during construction activities.

1. Demolition debris and construction materials will be prevented from entering the active stream and all concrete debris will be removed from the dewatered work area as necessary.
2. BMPs will be maintained throughout the demolition and construction periods to minimize erosion and sedimentation of the disturbed sections of the work area, including silt fencing, fiber rolls, and barriers installed between the project site, waters, and riparian habitat.
3. Cleaning, refueling, and storage of equipment will be located a minimum of 100 feet from aquatic areas, or will be surrounded by barriers such as fiber rolls if located closer.
4. During construction, all project-related hazardous materials spills within the project site will be cleaned immediately. Readily accessible spill prevention and cleanup materials will be kept by the contractor on-site at all times during construction.
5. After in-channel work is complete, all temporary fills, cofferdams, diversions, and other in-channel structures will be removed in a manner that minimizes disturbance to downstream flow and water quality.
6. Underwater sound pressure will be monitored during all impact pile driving. Pile driving operations will cease for the day if the results of underwater sound pressure monitoring show that sound levels upstream or downstream of the pile driving area are higher than the peak threshold of 206 dB or cumulative SEL of 187 dB (measured 32 ft [10m] from the source). If peak or cumulative SEL are exceeded, the qualified biologist will have the authority to halt impact pile driving and Caltrans will contact NMFS to determine if additional measures are necessary.
7. Except for installation of piles for the temporary work platform or trestle, construction work in the active channel will only be performed in a dry or dewatered work environment.
8. Prior to construction, a Water Pollution Control Plan or a Storm Water Pollution Prevention Plan will be prepared.

Two bridge alternatives have been proposed, with both occupying the same footprint and resulting in the same effects to steelhead and designated critical habitat for the species. The second design variation would allow for the bridge to be jacked up in anticipation of sea level

rise, but would not be raised up at this time due to the large increase in the project construction footprint that would be required.

1.3.4 Proposed Post-Construction Activities

After bridge construction, temporary excavations and fill will be removed entirely, the slopes and streambed will be graded to pre-construction conditions, and a metal-beam guardrail, road striping, and other supplementary activities will be constructed. Temporary access areas will be revegetated at a 3:1 ratio with locally present and fast growing willows. Revegetation details will be laid out in Caltrans' Landscape Architecture planting plan. Riparian plantings will be monitored for five years to ensure successful revegetation.

"Interrelated actions" are those 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 action under consideration (50 CFR 402.02). There is no interrelated or independent action associated with the proposed action based on NMFS's review of the consultation package.

1.4 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The action area includes the linear extent (upstream and downstream) of the SR-217 Bridge 51-0217 over San Jose Creek and encompasses the riparian corridor to the top of the bank. The action area extends 50-feet upstream of the existing bridge where the upper extent of the water diversion will be placed, and 350-feet downstream of the diversion, where temporary construction effects such as elevated turbidity are anticipated to cease. The approximate length of San Jose Creek within the action area is 545-feet.

2 ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an opinion stating how the agency's actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis.

The jeopardy analysis relies upon the regulatory definition of “to jeopardize the continued existence of” a listed species, which is “to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species” (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion relies on the definition of "destruction or adverse modification," which “means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features” (81 FR 7214).

The designation(s) of critical habitat for (species) use(s) the term primary constituent element (PCE) or essential features. The new critical habitat regulations (81 FR 7414) replace this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a ‘‘destruction or adverse modification’’ analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Identify the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Describe the environmental baseline in the action area.
- Analyze the effects of the proposed action on both species and their habitat using an “exposure-response-risk” approach.
- Describe any cumulative effects in the action area.
- Integrate and synthesize the above factors by: (1) Reviewing the status of the species and critical habitat; and (2) adding the effects of the action, the environmental baseline, and cumulative effects to assess the risk that the proposed action poses to species and critical habitat.
- Reach a conclusion about whether species are jeopardized or critical habitat is adversely modified.
- If necessary, suggest a RPA to the proposed action.

Information submitted by Caltrans and reviewed by NMFS included the following documents: (1) the biological assessment (BA) for the proposed action; (2) preliminary project plans, including cross sections, bridge layouts, and the planning study design for alternate two; and (3) fish passage analysis for the action area. NMFS relied on relevant ecological literature, documented in the official record for the proposed action, to inform the assessment of potential effects on endangered steelhead and designated critical habitat.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of endangered steelhead that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the current function of the essential PBFs that help to form that conservation value.

2.2.1 Status of the Species

Oncorhynchus mykiss is one of six Pacific salmon in the genus *Oncorhynchus* that are native to the North American coast. The natural history of this species dictates the terminology fisheries biologists and resource managers use when discussing *O. mykiss*, its habitat, and distribution. If the species remains in freshwater throughout their entire life cycle (and reside upstream of longstanding migration barriers), they are referred to as resident trout (non-anadromous), or rainbow trout. The anadromous or ocean-going form *of O. mykiss*, and its progeny, are listed under the ESA (NMFS 2006) and is typically referred to as "steelhead." Globally, steelhead are found in the western Pacific through the Kamchatka Peninsula in Asia, east to Alaska, south to southern California, and in Baja California del Norte (Ruiz-Campos and Pister 1995).

The listed unit of anadromous *O. mykiss* is termed a "distinct population segment" or DPS (NMFS 2006), and the listed unit contains several individual or fish-bearing watersheds. The DPS recognizes only the anadromous *O. mykiss*. In accordance with the listing decision, this biological opinion solely uses the DPS terminology and provides NMFS' conclusion as to the likelihood of jeopardy to the species based only on effects to the listed DPS. This biological opinion analyzes the effects of the proposed action on the following listed DPS and designated critical habitat, which occur in the action area (Table 2).

Table 1. Steelhead DPS considered in this biological opinion

Salmonid Species	ESU/DPS Name	Original Listing	Revised Listing(s)	Critical Habitat Designations
Steelhead (*O. mykiss*)	Southern California DPS	FR Notice: 62 FR 43937 Date: 08/18/1997	FR Notice 71 FR 5248 Date: 01/05/2006	FR Notice 70 FR 52488 Date: 09/02/2005

The geographic range of this DPS extends from the Santa Maria River, near Santa Maria, to the California-Mexico border (NMFS 1997; 2006), which represents the known southern geographic extent of the anadromous form of *O. mykiss*. NMFS described historical and recent steelhead abundance and distribution for southern California through a population characterization (Boughton et al. 2006). Surveys in Boughton et al. (2006) indicate between 58 percent and 65

percent of the historical steelhead basins currently harbor *O. mykiss* populations at sites with connectivity to the ocean. Most of the apparent losses of steelhead were noted in the south, including Orange and San Diego counties (Boughton et al. 2005). The majority of losses (68 percent) of steelhead were associated with anthropogenic barriers to steelhead migration (e.g., dams, flood-control structures, culverts, etc.). Additionally, the investigators found the barrier exclusions were statistically associated with highly-developed watersheds.

Steelhead in southern California are categorized as "winter run" because they migrate into natal streams between December and April (Fukushima and Lesh 1998), arriving in reproductive condition and spawning shortly thereafter. Adults may migrate up to hundreds of miles to reach their spawning grounds, depending on the watershed. Steelhead have evolved, over ecological time, to migrate deep into the extreme fringes of a watershed to exploit the environmental conditions that favor production of young (Montgomery et al. 1999). Steelhead in southern California streams can be tolerant of warm water, remaining active and feeding at temperatures that are higher than the temperature preferences and heat tolerances reported for the species based on individuals from northern latitudes (Spina 2007). While 46 drainages support this DPS (Boughton et al. 2005), only 10 population units possess a high and biologically plausible likelihood of being viable and independent[1] (Boughton et al. 2006).

Although the geographic area of the DPS is broad, the individual population units are sparsely distributed throughout the DPS with extensive spatial breadth often existing between nearest-neighbor populations (Boughton et al. 2005; NMFS 2005; Boughton et al. 2006). Extinction of some population units has been observed as well as contraction of the southern extent of the species' geographic range (Boughton et al. 2005; Gustafson et al. 2007).

The small number of extant populations that make up this DPS are vulnerable to extirpation due to loss of accessibility to freshwater spawning and rearing habitat, low abundance, degraded estuarine habitats and watershed processes essential to maintain freshwater habitats (NMFS 2016). There is little new evidence to suggest that the status of the SC DPS has changed appreciably in either direction since publication of the most recent collections of status reviews (Good et al. 2005; Williams et al. 2011; NMFS 2016). New information since the last review concerning the status of anadromous runs in the DPS is limited and does not suggest a change in extinction risk.

Population abundance trends can vary based on yearly rainfall within the range of the SC DPS. A relatively large number of adult steelhead were observed in 2008, two years after an extended wet spring that presumably gave smolts ample opportunity to migrate to the ocean. Low rainfall appears to have caused many spawners to get trapped in freshwater, where they were observed during the summer; in addition, low rainfall probably improved conditions for viewing fish during snorkel surveys, and for trapping fish in weirs (Williams et al. 2011).

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

2.2.2 General Life History of Steelhead

O. mykiss possesses an exceedingly complex life history (Behnke 1992). Distinctly different than other Pacific salmon, steelhead adults can survive their first spawning and return to the ocean to reside until the next year to reproduce again. For returning adults, the specific timing of spawning can vary by a month or more among rivers or streams within a region, occurring in winter and early spring. The spawning time frames depend on physical factors such as the magnitude and duration of instream flows and sand-bar breaching. Once they reach their spawning grounds, females will use their caudal fin to excavate a nest (redd) in streambed gravels where they deposit their eggs. Males will then fertilize the eggs and, afterwards, the females cover the redd with a layer of gravel, where the embryos (alevins) incubate within the gravel. Hatching time can vary from approximately three weeks to two months depending on surrounding water temperature. The young fish (fry) emerge from the redd two to six weeks after hatching. As steelhead begin to mature, juveniles or "parr" will rear in freshwater streams anywhere from 1-3 years. Juvenile steelhead can also rear in seasonal coastal lagoons or estuaries of their natal creek, providing over-summering habitat.

Juvenile steelhead emigrate to the ocean (as smolts) usually in late winter and spring and grow to reach maturity at age 2-4, but steelhead can reside in the ocean for an additional 2-3 years before returning to spawn. The timing of emigration is influenced by a variety of parameters such as photoperiod, temperature, breaching of sandbars at the river's mouth and streamflow. Extended droughts can cause juveniles to become landlocked, unable to reach the ocean (Boughton et al. 2006).

Through studying the otolith (ear stone) microchemistry of *O. mykiss*, researchers further understand the complex and intricate life history of steelhead. Specifically, resident rainbow trout can produce steelhead progeny; likewise, steelhead can yield resident rainbow trout progeny (Zimmerman and Reeves 2000). Additionally, evidence indicates that sequestered populations of steelhead (e.g., above introduced migration barriers) can exhibit traits that are the same or similar to anadromous specimens with access to the ocean. Examples include inland resident fish exhibiting smolting characteristics and river systems producing smolts with no regular access for adult steelhead. This evidence suggests the ecological importance of the resident form to the viability of steelhead and the need to reconnect populations upstream and downstream of introduced migration barriers. The loss or reduction in anadromy and migration of juvenile steelhead to the estuary or ocean is expected to reduce gene flow, which strongly influences population diversity (McElhany et al. 2000). Evidence indicates genetic diversity in populations of southern California steelhead is low (Girman and Garza 2006).

2.2.3 Steelhead Habitat Requirements

Habitat requirements of steelhead generally depend on the life history stage. Steelhead encounter several distinct habitats during their life cycle. Water discharge, water temperature, and water chemistry must be appropriate for adult and juvenile migration. Suitable water depth and velocity, and substrate composition are the primary requirements for spawning. Furthermore, dissolved oxygen concentration, pH, and water temperature are factors affecting survival of incubating embryos. The presence of interspatial area between large substrate particle types is important for maintaining water-flow through the nest as well as dissolved oxygen levels within

the nest. These spaces can become filled with fine sediment, sand, and other small particles. Additionally, juveniles need abundant food sources, including insects, crustaceans, and other small fish. Habitat must also provide places to hide from predators, such as under logs, root wads and boulders in the stream, and beneath overhanging vegetation. Steelhead also need places to seek refuge from periodic high-flow events (side channels and off channel areas), and may occasionally benefit from the availability of cold-water springs or seeps and deep pools during summer. Estuarine habitats can be utilized during the seaward migration of steelhead, as these habitats have been shown to be nurseries for steelhead. Estuarine or lagoon habitats can vary significantly in their physical characteristics from one another, but remain an important habitat requirement as physiology begins to change while juvenile steelhead become acclimated to a saltwater environment.

2.2.4 Status of Designated Critical Habitat

Within the process of designating critical habitat, NMFS developed a list of Primary Constituent Elements (PCEs) (NMFS 2005) for habitat sites essential to support one or more life stages of the DPS, such as sites for spawning, rearing, and migration (Table 3). These sites in turn contain physical or biological features[2] essential to the conservation of the endangered SC DPS of steelhead.

Habitat for steelhead has suffered destruction and modification, and anthropogenic activities have reduced the amount of habitat available to steelhead (Nehlsen et al. 1991; NMFS 1997; Boughton et al. 2005; NMFS 2006). In many watersheds throughout the range of the SC DPS, the damming of streams has precluded steelhead from hundreds of miles of historical spawning and rearing habitats (e.g., Twitchell Reservoir within the Santa Maria River watershed, Bradbury Dam within the Santa Ynez River watershed, Matilija Dam within the Ventura River watershed, Rindge Dam within the Malibu Creek watershed, Pyramid Dam and Santa Felicia Dam on Piru Creek). These dams create physical barriers and hydrological impediments for adult and juvenile steelhead migrating to and from spawning and rearing habitats. Likewise, construction and

Table 2. Physical or biological features which are critical to the conservation of sites determined essential to support one or more life stages of steelhead (NMFS 2005).

Primary Constituent Elements	Primary Characteristics	Essential to Conservation
Freshwater spawning sites	Water quantity and quality conditions and substrate supporting spawning, incubation, and larval development.	Water quantity and quality conditions and substrate supporting spawning, incubation, and larval development.
Freshwater	Water quantity and floodplain connectivity	Without these features juveniles cannot

[2] The essential features include water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, single or complex combination of habitat characteristics, and ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity (per proposed rule: Docket No. FWS-HQ-ES-2012-0096; Docket No. 120106025-3256-0l; 4500030114 on May 12, 2014; 50 CFR 424 Vol. 79, No. 91. Page 27066-27077).

Primary Constituent Elements	Primary Characteristics	Essential to Conservation
rearing sites	to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.	access and use the areas needed to forage, grow, and develop behaviors (e.g., predator avoidance, competition) that help ensure their survival.
Freshwater migration corridors	Free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.	Without these features juveniles cannot use the variety of habitats that allow them to avoid high flows or predators, successfully compete, begin the behavioral and physiological changes needed for life in the ocean, and reach the ocean in a timely manner; allow fasting steelhead adults to successfully swim upstream, avoid predators, and reach spawning areas on limited energy stores.
Estuarine sites	Free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.	Without these features juveniles cannot reach the ocean in a timely manner and use the variety of habitats that allow them to avoid predators, compete successfully, and complete the behavioral and physiological changes needed for life in the ocean; they provide a final source of abundant forage for adult steelhead that will provide the energy stores needed to make the physiological transition to fresh water, migrate upstream, avoid predators, and develop to maturity upon reaching spawning areas.
Nearshore marine areas	Free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.	Without these features juveniles cannot successfully transition from natal streams to offshore marine areas.
Offshore marine areas	With water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.	Without them juveniles cannot forage and grow to adulthood.

ongoing impassable presence of highway projects have rendered habitats inaccessible to adult steelhead (Boughton et al. 2005). Within stream reaches that are accessible to this species (but that may currently contain no fish), urbanization (including effects due to water exploitation) has in many watersheds eliminated or dramatically reduced the quality and amount of living space

for juvenile steelhead. The number of streams that historically supported steelhead has been dramatically reduced (Good et al. 2005). Groundwater pumping and diversion of surface water contribute to the loss of habitat for steelhead, particularly during the dry season (e.g., (Spina et al. 2006; NMFS 2008)). The extensive loss and degradation of habitat is one of the leading causes for the decline of steelhead abundance in southern California and listing of the species as endangered (NMFS 1997; 2006).

A significant amount of estuarine habitat has been lost across the range of the DPS with an average of only 22 percent of the original estuarine habitat remaining (NMFS 2016). The condition of these remaining wetland habitats is largely degraded, with many wetland areas at continued risk of loss or further degradation. Although many historically harmful practices have been halted, much of the historical damage remains to be addressed and the necessary restoration activities will likely require decades. Many of these threats are associated with the larger river systems such as the Santa Maria, Santa Ynez, Ventura, Santa Clara, Los Angeles, San Gabriel, Santa Ana, San Luis Rey, Santa Margarita, San Dieguito, and San Diego rivers, but they also apply to smaller coastal systems such as Malibu, San Juan, and San Mateo creeks. Overall, these threats have remained essentially unchanged for the DPS as determined by the last status review (Williams et al. 2011) though some individual, site specific threats have been reduced or eliminated as a result of conservation actions such as the removal of small fish passage barriers.

2.2.5 Influence of a Changing Climate on the Species

One factor affecting the rangewide status of endangered steelhead, and aquatic habitat at large, is climate change. For 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. High temperatures will become more common, indicating that southern California steelhead may experience increased thermal stress even though this species has shown to endure higher than preferable body temperatures (Spina 2007).

Precipitation trends are also important to consider. The Southwest region, including California, showed a 16 percent increase in the number of days with heavy precipitation from 1958 to 2007. Potential impacts to southern California steelhead in freshwater streams include damage to spawning redds and washing away of incubating eggs due to higher winter stream flow (2009), and poor freshwater survival due to longer and warmer periods of drought (Hanak et al. 2001; Mastrandrea and Luers 2012), which may lead to lower host resistance of steelhead to more virulent parasitic and bacterial diseases (McCullough 1999; Marcogliese 2001). Snyder and Sloan (2005) projected mean annual precipitation in southwestern California to decrease by 2.0 cm (four percent) by the end of the 21st century.

Wildfires periodically burn large areas of chaparral and adjacent woodlands in autumn and winter in southern California (Westerling et al. 2004). Increased wildfire activity over recent decades reflects sub-regional responses to changes in climate, specifically observations of warmer and earlier onset of spring along with longer summer-dry seasons (Westerling et al. 2004; Westerling and Bryant 2008).

Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia et al. 2002). Additionally, upper ocean temperature is the primary

physical factor influencing the distribution of steelhead in the open ocean, and a warming climate may result in a north-ward shift in steelhead distribution (Myers and Mantua 2013).

In summary, observed and predicted climate-change effects are generally detrimental to the species, given the unprecedented rate of change and uncertainty about the ability to adapt, so unless offset by improvements in other factors, status of the species and critical habitat is likely to decline over time. The climate change projections referenced above cover the time period between the present and approximately 2100. In general, climate change projections cannot be distinguished from annual and decadal climate variability for approximately the first 10 years of the projection period (see (Cox and Stephenson 2007)). While there is uncertainty associated with projections beyond 10 years, which increases over time, the direction of change is relatively certain (McClure et al. 2003).

2.3 Environmental Baseline

The "environmental baseline" includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

2.3.1 Status of Aquatic Habitat in the Action Area

Aquatic habitat within the action area of San Jose Creek consists mainly of intertidal saltmarsh with intermittent connectivity to the Pacific Ocean as the mouth of the Goleta Slough complex periodically closes due to littoral sand transport. Tidal influences reach to about 1 mile upstream of the SR-217 Bridge. Riparian vegetation along the channel consists mostly of iceplant (*Carpobrotus edulis*) indicating a dominantly brackish area. Freshwater flows from upstream carries sediments that are deposited within the action area, adjacent tributaries, and the lagoon downstream (Padre-Associates 2010). These streams are routinely dredged by Santa Barbara County Flood Control District to maintain water quality. There is no apparent impediment to passage of steelhead within the action area.

2.3.2 Status of Steelhead in the Action Area

Juvenile and adult steelhead have been observed throughout San Jose Creek from the 1940s to 2002 (Stoecker and CCP 2002). Within five miles of the action area, the numbers of juvenile steelhead observed ranged from 1 to 100 since the 1990s. Based on the habitat conditions within the action area and steelhead observed in various reports, NMFS estimates that up to 50 juvenile steelhead may be present in the work area to be dewatered each construction season (or 100 juvenile steelhead total over 2 construction seasons), depending on flow conditions and overall production within the watershed during a given year. Adult steelhead are not expected to be present within the action area during the time of construction activities (June 1 to October 31).

2.3.3 Factors Affecting Species Environment in the Action Area and Vicinity

Agricultural Development

Cultivated fields and open farmland exist in the vicinity of the action area in the Patterson Agricultural Block. There is potential for increased turbidity or nutrient loading due to runoff from agriculture and livestock areas adjacent to the creek. High turbidity concentrations can cause fish mortality, reduce fish feeding efficiency and decrease food availability (Berg and Northcote 1985; McLeay et al. 1987; Gregory and Northcote 1993; Velagic 1995). 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). In addition, demands on water resources may occur from upstream agricultural activities. It is unknown to what extent water demands may affect the quantity and extent of surface water and essential features of steelhead habitat within the action area. Lowered streamflow or stream drying could result in a significant reduction or loss of habitat and even mortality to steelhead (Spence et al. 1996). These impacts if occurring have the potential to adversely impair steelhead survival within San Jose Creek.

Urban Development

San Jose Creek within the action area flows through the County of Santa Barbara near the City of Goleta. Urban development of lands often results in an increase of impervious surfaces which can lead to increased runoff of pollutants to surface water. The locations of the SR-217 and SR-101 bridges likely results in road surface runoff, which reduces the water quality within the action area to an unknown degree. The effects on water quality from road surface runoff are most likely occurring during the winter when there is runoff during rainstorms. Runoff from road surfaces contains dirt, oils, automotive fluids, and petrochemicals that are harmful to aquatic life, including steelhead (Spence et al. 1996). Increased runoff may not be confined to the wet season, but may extend into the dry season due to the washing of streets, parking lots, vehicles, and other elements of the urban environment. Once in surface water, pollutants of sufficient concentration may impair water quality and alter the characteristics of the channel bed. Long-term urbanization effects have been associated with lower fish species diversity and abundance (Weaver and Garman 1994). Consequently, the proliferation of urban areas within the San Jose Creek watershed is of concern.

Channelization and Flood Control Maintenance

Current flood-control activities in lower Goleta Slough have confined the natural floodplain and limited opportunities for riparian communities to become established (Padre-Associates 2010). 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 meander. 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.

2.4 Effects of the Action

Under the ESA, “effects of the action” means the direct and indirect effects of an action on the

species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

2.4.1 Alteration of Aquatic Habitat

Dewatering the immediate work area is expected to temporarily disrupt steelhead behavior patterns (i.e., rearing, migrating), cause temporary loss of aquatic habitat, as well as loss of invertebrate forage for steelhead within the dewatered work area. About 45-linear feet of San Jose Creek will be dewatered two times for up to five months during the dry season (June 1 through October 31) to allow construction in the dry.

Dewatering will temporarily exclude the action area from serving as a freshwater rearing site and a freshwater corridor for endangered steelhead. Juvenile steelhead migration downstream through the action area will be hindered while the diversion is in place. Downstream migration of juveniles from reaches upstream of the action area is not expected to be affected by the diversion since the diversion will not span the entire channel. Adult steelhead are not expected to be in the river and, therefore, are not likely to be affected by construction activities.

Aquatic macroinvertebrate forage will be temporarily reduced or eliminated within the action area due to isolating the workspace 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 stream flow 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 re-watering (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 area via drift. Consequently, 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 migration through the action area will be temporary and is not expected to result in lethal effects. Relocated steelhead will be able to use all aquatic habitat downstream of the dewatered portion of the creek, which seems to be of similar quality as the reach subject to dewatering (J. Adams, NMFS, 2018, personal observation). Full connectivity between the upstream and downstream reaches will be restored after the water diversion is removed and river flows are returned to the dewatered area, and no long-term diminishment in the physical capacity of the habitat to serve the intended functional role for steelhead will result from the proposed action. Overall, effects to steelhead and designated critical habitat for the species from water diversion are expected to be non-lethal and temporary.

2.4.2 Capture and Relocation of Steelhead

During the dewatering process, the water diversion could harm or kill rearing juvenile steelhead by concentrating or stranding them in residual wetted, if individuals don’t move to adjacent areas

of aquatic habitat during water diversion (Clothier 1953; 1954; Kraft 1972; Campbell and Scott 1984).

However, procedures are proposed to reduce the likelihood of harm and mortality to juvenile steelhead within the area to be dewatered. Biologists will capture and relocate steelhead to the nearest suitable habitat within the creek, though suitable habitat is not described by Caltrans. Biologists will herd fish out of the area with seines and block nets and will use dip nets in residual pools in order to relocate steelhead out of the work area. In the event one or more steelhead are missed by the biologists and stranded in the diversion area, steelhead mortality may be observed. Caltrans proposes that biologists will be approved by NMFS, and would be empowered to halt construction activities for the benefit of reducing harm or mortality of steelhead. Caltrans does not specify the number, qualifications or expertise of the biologists. Although Caltrans proposes to notify NMFS of the number of steelhead that may be harmed or injured as a result of construction activities, including dewatering, the actual plan for reporting the number and disposition of steelhead that are relocated lacks important details, including a schedule.

The proposed action does not include sufficient detail regarding the criteria Caltrans would apply for selecting relocation sites for juvenile steelhead. Sites selected for relocating juvenile steelhead should have ample habitat, but relocated fish may compete with other fish, potentially increasing competition for available food and habitat (Keeley 2003). Stress from crowding, including increase 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 in the action area. Once the proposed action is completed and the water diversion is removed, living space for juvenile steelhead will return to the dewatered action area.

Based on steelhead surveys and anecdotal observations of juvenile steelhead in the vicinity of the action area on San Jose Creek, NMFS expects no more than 50 juvenile steelhead will need to be relocated each construction season (no more than 100 juveniles over 2 construction seasons). NMFS expects that 5 juvenile steelhead may be injured or killed as a result of the proposed action each construction season (no more than 10 juveniles over 2 construction seasons). This estimated mortality is based on NMFS' experience and knowledge gained on similar projects in Santa Barbara County during the last several years. 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 SC DPS of endangered steelhead. Therefore, the effects of the relocation on steelhead are not expected to give rise to population-level effects.

2.4.3 Disturbance to the Streambed

Although manipulation and disturbance of the streambed can result in changes to channel morphology and hydraulic conditions that may create impediments to steelhead migration or alter juvenile rearing conditions, review of the proposed action indicates the alignment of the new pier is not expected to result in substantive changes to stream-channel morphology or rearing conditions. The eight 42-inch columns that make up the pier will be placed in the same configuration as the existing six piers, which is parallel to the direction of streamflow and

resulting in the loss of about 18 ft^2 of designated critical habitat. Hydraulic computations and a HEC-RAS model were used to analyze potential post-project hydraulic conditions through the project reach. The results of the model showed that the proposed action will slightly decrease water surface elevation within the limits of the bridge due to the reduction in cross-sectional area, but steelhead-passage conditions will not be substantively affected. The PBFs of critical habitat for juvenile rearing (i.e., riparian, natural cover, shelter) within the action area occur immediately upstream of the bridge. Therefore, the small, discrete loss of critical habitat located underneath the bridge mid-channel is not expected to diminish the overall functional value of rearing habitat within the action area. Additionally, streambed contours will be restored to their original condition upon completion of the project. Based on these findings, the proposed action is not anticipated to appreciably reduce the functional value of the action area as migratory corridor or rearing site.

2.4.4 Alteration of Water Quality

Short-term increases in turbidity are anticipated during water diversion and dewatering activities, during the first flush of the stream channel when 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 because water quality is an important feature of steelhead critical habitat (NMFS 2005) and elevated turbidity can affect juvenile 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 Kelley 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 Kelley 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 displace salmonids from established territories to less suitable habitat and increase competition and predation, thereby reducing survival (Waters 1995).

NMFS does not expect acute or chronic effects on aquatic habitat or steelhead in San Jose 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. 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 project activities. BMPs and sediment control devices (i.e., straw-fiber rolls, silt-fencing, barriers, and settling basins) should be deployed prior to construction and thus are expected to minimize effects of sedimentation and turbidity on water quality. The success of these measures have been documented during other similar projects (J. Ogawa, NMFS, 2019, personal communication), through the efficacy of the proposed measures should be verified in the field at the time of the proposed action. NMFS expects that the disturbance within the stream channel will not result in increases sedimentation within the creek in the long term.

2.4.5 Disturbance to Streamside Vegetation

Riparian vegetation provides numerous functional values to fish 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, large-woody debris such as 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 has the potential to temporarily affect riparian vegetation within the action area of San Jose Creek due to a discrete loss of some shade and cover currently present along the active channel. 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 vegetation as a result of the proposed action is expected to be confined to a small localized area and temporary, because riparian vegetation will be replanted throughout the disturbed areas to minimize impacts from project construction. Caltrans will revegetate disturbed areas at a ratio of 3:1 of fast growing willows. Based on NMFS's experience observing the response of riparian vegetation to human-made disturbances (J. Ogawa, NMFS 2019, personal communication), the riparian zone is expected to recover from the project one to two years following the completion of construction. Overall, the amount of riparian vegetation affected by the proposed action is not expected to diminish the overall functional value of the migratory corridor and lagoon rearing sites within the action area. This is expected to be verified through the findings obtained from Caltrans's proposed vegetation-monitoring program under the proposed action.

2.4.6 Pile Installation

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). The Fisheries Hydroacoustic Working Group (FHWG[3]), uses a metric threshold criterion to correlate physical injury to fish exposed to underwater producing pile driving with impact hammers. Specifically, this includes a cumulative sound exposure level (SEL) of 187 decibels (dB) for fish two grams or greater, or 183 dB for fish less than 2 grams. If the threshold is exceeded, then physical injury is assumed to occur. If pile driving is required to install a temporary trestle, at a distance of 2-meters from the driven 12-inch steel pipe, the SEL is expected to be 187 dB; the threshold that may cause injury to juvenile steelhead. Steelhead are not expected to remain that close to a driven pile. Steelhead within 100m of the driven pile may exhibit behavioral effects, but are not expected to incur injury. To further minimize the effects of pile driving on steelhead, sound levels will be monitored to ensure that levels upstream and downstream of the dewatered area are not higher than the anticipated cumulative SEL. The concrete piles that will be driven for the retaining wall will be 60 feet from the creek. The distance from the water and content of the substrate are expected to dissipate any adverse hydroacoustic effects to steelhead. Therefore, no substantive adverse effect to steelhead is expected as a result of pile driving associated with the proposed action.

[3] Member agencies of the FHWG include Caltrans, Federal Highways Administration, NMFS (West Coast Region), United States Fish and Wildlife Service, Oregon and Washington Departments of Transportation.

2.5 Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). 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 ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline *vs.* cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.3.

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. Consequently, NMFS believes no cumulative effect, beyond the continuing effects of present land uses as described in the Environmental Baseline (Section 2.3), is likely.

2.6 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminishes the value of designated or proposed critical habitat for the conservation of the species.

Juvenile steelhead are expected to be present in the action area during the time the proposed action will be implemented and, therefore, subject to direct and indirect effects associated with aspects of the proposed action. The main risk to individual steelhead involves effects due to capture and relocation. The adverse effects include potential injury or mortality during the process of capture and relocation during dewatering activities, but precautions are in place to minimize, if not eliminate, the risk of injury and mortality, and adjacent instream habitats are expected to suitably harbor the relocated steelhead. Because the habitat alteration due to the dewatering is short lived and localized, the proposed action is not expected to result in adverse modification to designated critical habitat.

Based on steelhead surveys described in the environmental baseline section (2.3.2), NMFS concludes non-lethal take of no more than 50 juvenile steelhead that may be captured and relocated as a result of dewatering within the action area during each construction season (no more than 100 individuals over 2 construction seasons), with a potential lethal take of no more than 5 out of the 50 (total of 10 individuals over 2 construction seasons), thus the risk of

mortality is low. Any juvenile steelhead present in the action area likely make up a small proportion of the SC DPS of steelhead.

Overall, the impacts to critical habitat are expected to be temporary and not translate into a reduction in the functional value of the habitat in the long term, even when considering effects due to the environmental baseline and cumulative effects, and the status of the species and critical habitat. The replanted areas are expected to create a functional riparian zone that provides cover and shelter for steelhead within the action area of San Jose Creek. The impacts from disturbing the streambed are not expected to adversely affect the quality or quantity of aquatic habitat; rather, the proposed action is expected to improve steelhead passage conditions within the localized area. Maintained rearing habitat and improved steelhead passage conditions within the action area of San Jose Creek are expected to favor the viability of the endangered SC DPS of steelhead and not reduce the value of critical habitat for the species.

2.7 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of southern California steelhead or destroy or adversely modify its designated critical habitat.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a 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 regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

2.8.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows: All steelhead in the action area, expected to be no more than 50 juveniles that are captured or harassed during each construction season (no more than 100 juveniles over 2 seasons). No more than 5 juvenile steelhead are expected to be injured or killed as a result of dewatering the action area and relocating the species each construction season (total of 10 juvenile steelhead). No other incidental take 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.

2.8.2 Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species.

2.8.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize and monitor incidental take of steelhead. The results of the effect analysis provide the basis for the following reasonable and prudent measures:

1. Avoid and minimize harm and mortality of steelhead during relocation activities.

2.8.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and Caltrans or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). Caltrans or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

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

    a. Caltrans shall retain at least 2 biologists with expertise in the areas of resident or anadromous salmonid biology and ecology, fish/habitat relationships, biological monitoring and handling, collecting, and retaining salmonid species. The names and credentials of the biologists should be sent to NMFS (Jess Adams, NMFS, 501 West Ocean Blvd., Suite 4200, Long Beach, California 90802-4213) for review and potential approval 15 days prior to the start of dewatering activities.

    b. Caltrans' biologists shall identify and evaluate the suitability of downstream and upstream steelhead relocation habitat(s) prior to undertaking the dewatering activities that are required to isolate the work area from flowing water. The biologists shall evaluate potential relocation sites based on attributes such as adequate water quality (a minimum dissolved oxygen level of 5 mg/L and suitable water temperature), cover (instream and over-hanging vegetation or woody debris), and living space. Multiple relocation habitats may be necessary to prevent overcrowding of a single habitat depending on the number of steelhead captured, current number of steelhead already occupying the relocation habitat(s), and the size of the receiving habitat(s).

    c. Caltrans's biological monitor shall provide a written steelhead-relocation report to NMFS within 30 working days following completion of the proposed action. The

report shall include 1) the number and size of all steelhead relocated during the proposed action; 2) the date and time of the collection and relocation; 3) a description of an problem encountered during the project or when implementing terms and conditions; and 4) ay effect of the proposed action on steelhead that was not previously considered. The report shall be sent to Jess Adams, NMFS, 501 West Ocean Blvd., Suite 4200, Long Beach, California 90802-4213.

d. Caltrans's biologist shall contact NMFS (Jess Adams, 562-980-4013) 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, frozen as soon as practical, and placed in an appropriate-sized sealable bag that is labeled with the date and location of the collection and fork length and weight of the specimen(s). Frozen samples shall be retained by the biologist until additional instructions are provided by NMFS. Subsequent notification must also be made in writing to Jess Adams, NMFS, 501 West Ocean Blvd, Suite 4200, Long Beach, California 9082-4213 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 of the steelhead; 3) cause of injury or death; and 4) name and affiliation of the person who found the specimen.

2.9 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

NMFS has no conservation recommendation related to the proposed action considered in this biological opinion.

2.10 Reinitiation of Consultation

This concludes formal consultation for Caltrans. As 50 CFR 402.16 states, 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 taking specified in the ITS 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 this opinion, (3) the agency action is subsequently modified in a manner that causes an effect on the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

3 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a

document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

3.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion is Caltrans. Other interested users could include the California Department of Fish and Wildlife and U.S. Fish and Wildlife Service. Individual copies of this opinion were provided to Caltrans. This opinion will be posted on the Public Consultation Tracking System. The format and naming adheres to conventional standards for style.

3.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

3.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

4 REFERENCES

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