



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
West Coast Region  
777 Sonoma Avenue, Room 325  
Santa Rosa, California 95404-4731

June 25, 2020

Refer to NMFS No: WCRO-2020-01495

Paul Holmes  
District 5 Biologist  
California Department of Transportation  
50 Higuera Street  
San Luis Obispo, California 93401

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for the Marsh Street Bridge Replacement in San Luis Obispo (BRLS-5016(050))

Dear Mr. Holmes:

On June 9, 2020, NOAA's National Marine Fisheries Service (NMFS) received the California Department of Transportation's (Caltrans) request for formal consultation under Section 7 of the U.S. Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.). This request concerns the Marsh Street Bridge Replacement Project. The proposed action is within the range of the threatened South-Central California Coast (SCCC) Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) and designated critical habitat for the species. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

The biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of the threatened SCCC DPS of steelhead or destroy or adversely modify its designated critical habitat. NMFS believes the proposed action is likely to result in incidental take of steelhead, 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 condition to minimize and monitor incidental take of threatened steelhead.

Please contact Jess Adams in Long Beach, California at [jessica.adams@noaa.gov](mailto: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: Freddy Otte, City of San Luis Obispo ([fotte@slocity.org](mailto:fotte@slocity.org))  
Copy to E-File: ARN 151422WCR2014CC00306



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

Marsh Street Bridge Replacement


NMFS Consultation Number: WCRO-2020-01495

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?
South-Central California Coast steelhead ( <i>Oncorhynchus mykiss</i> )	Threatened	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:** June 25, 2020

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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, as amended.

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 within two weeks at the NOAA Library Institutional Repository [<https://repository.library.noaa.gov/welcome>]. A complete record of this consultation is on file at NMFS' California Coastal Office, Southern California Branch in Long Beach, California.

### **1.2 Consultation History**

On December 12, 2014, NMFS received from the California Department of Transportation (Caltrans) a consultation request for the City of San Luis Obispo's (City) Marsh Street Bridge Replacement Project (proposed action). The proposed action after concluding that Caltrans' request was insufficient to begin consultation, NMFS sent a letter dated January, 7, 2015, to Caltrans that requested more information and recommended measures to avoid or minimize adverse effects on the threatened South-Central California Coast (SCCC) Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) and designated critical habitat for this species. On April 18, 2015, NMFS received Caltrans' letter requesting concurrence that the proposed action was not likely to adversely affect threatened steelhead and designated critical habitat for the species. The request included additional information and NMFS issued a letter of concurrence on May 12, 2015.

On June 2, 2020, a steelhead was found in a pool within the action area of San Luis Obispo Creek under one of the diversion pipes that the City had installed to dewater the work area. NMFS received from the City an incident report on June 3, 2020, which described the circumstance leading to the discovery of the steelhead and relocation of the individual to a large pool immediately upstream of the action area. Subsequently, NMFS and Caltrans discussed additional avoidance measures to minimize effects of the action on threatened steelhead. At that time, NMFS recommended that Caltrans pursue an exemption for any future incidental take of threatened steelhead, based on the expectation that one or more individual steelhead could be discovered in the action area. The exemption would not be applicable to the individual discovered on June 2, 2020, which was subsequently captured and relocated. On June 8, 2020, NMFS received Caltrans' letter requesting reinitiation of consultation and formal consultation. Subsequent correspondences between Caltrans and NMFS clarified the changes to the proposed action and effects determinations; consultation was initiated on June 9, 2020.

### **1.3 Proposed Federal Action**

Under the ESA, “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).

Under the proposed action, Caltrans along with the City of San Luis Obispo, would replace the existing Marsh Street Bridge over San Luis Obispo Creek. A single-span bridge (approximately 69-feet wide x 60-feet long) on a new alignment will be placed on either driven piles or cast-in-place drilled-hole piles within the creek banks. Prior to instream channel work, a replacement sewer line was constructed under the channel by directional drilling. Construction activities will require the work area to be dewatered and installation of a temporary access path into the creek channel. The diversion was installed June 1, 2020, and required further dewatering the next day. Once the area is dewatered, the existing bridge would be demolished and removed. Following construction, Caltrans proposes to mitigate temporary and permanent impacts to riparian vegetation at a 3:1 ratio. We considered, under the ESA, whether or not the proposed action would cause any other activities and determined that it would not.

Caltrans proposes to implement the following avoidance and minimization measures as part of the proposed action:

- Dewatering and pile driving activities will occur between June 1 and November 1 to avoid the steelhead migration window. A qualified biologist will be present during construction and demolition activities to inspect the dewatered area daily to ensure the diversion remains intact.
- To further reduce the likelihood of direct effects to steelhead, temporary block nets will be installed to isolate the work area from surrounding flowing water. Upon completion of construction activities, the block nets will be removed.
- Best management practices will be implemented during dewatering, construction, and drilling activities to minimize the likelihood that water-quality alterations within and downstream of the action area would be observed.
- Block nets will remain in place and gravel fill will be placed between the upper two cofferdams to prevent steelhead from entering the construction area.
- If additional steelhead need to be relocated, an approved biologist will capture them with a dip net, and place them in a bucket with clean creek water, an aerator, and a small willow branch for cover. They will be placed in the large pool immediately upstream of the construction site where more than 30 juvenile steelhead were observed June 2, 2020. In the case of overcrowding, captured steelhead will be placed in the pool-chute habitat complex immediately downstream of the project site.

## **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 provide 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 “jeopardize the continued existence of” a listed species, which is “to engage in an action that reasonably 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 as a whole for the conservation of a listed species” (50 CFR 402.02).

The designation of critical habitat for threatened steelhead uses the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced 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.

The 2019 regulations define effects of the action using the term “consequences” (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44977), that definition does not change the scope of our analysis and in this opinion we use the terms “effects” and “consequences” interchangeably.

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

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the

environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly 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, or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

- If necessary, suggest a reasonable and prudent alternative to the proposed action.

## **2.2 Rangewide Status of the Species and Critical Habitat**

This opinion examines the status of the threatened 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' "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 function of the PBFs that are essential for the conservation of the species.

### **2.2.1 Status of the Species**

The threatened SCCC DPS of steelhead occupies rivers from the Pajaro River, Santa Cruz County, south to but not including the Santa Maria River, in Santa Barbara County. The decline of the species prompted listing of the SCCC DPS of steelhead as threatened on 18 August 1997 (62 FR 43937) and a revised listing on January 5, 2006 (71 FR 834). The status of the SCCC steelhead populations was assessed by NMFS' Biological Review Team (BRT) in 1996 (Busby et al.), 2005 (Good et al.), 2011 (Williams et al.), and 2016 (NMFS). Abundance of adult steelhead in the SCCC DPS declined from a historical high abundance of 25,000 returning adults, to an estimate of 4,750 adults in 1965 for five river systems (Pajaro, Salinas, Carmel, Little Sur, and Big Sur), to fewer than 500 adults currently (Boughton and Fish 2003; Good et al. 2005; Helmbrecht and Boughton 2005; Williams et al. 2011).

As part of the assessment and listing of SCCC steelhead, NMFS convened the BRT, composed of an expert panel of scientists. The BRT evaluated the viability and extinction risk of naturally spawning populations within each DPS. The BRT found high risks to abundance, productivity, and the diversity of the SCCC DPS and expressed particular concern for the DPS's connectivity and spatial structure. NMFS' latest 5-year status review for the SCCC DPS of steelhead states the following:

"The extended drought and drying conditions associated with projected climate change has the potential to cause local extinction of *O. mykiss* populations and thus reduce the genetic diversity of fish within the South-Central California Coast Steelhead Recovery Planning Area." (p. 55, NMFS 2016)

Moreover, NMFS' recent assessment of viability for steelhead provides an indication that the South Central California Coast Steelhead DPS may be currently experiencing an increased extinction risk (Williams et al. 2016).

#### 2.2.1.1 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).

#### 2.2.1.2 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 spaces 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.

#### 2.2.1.3 Influence of a Changing Climate on the Species

Climate-driven changes to stream, estuarine and marine have the potential to significantly impact steelhead populations. Coupled with naturally stressful environments at the southern limit of the species distribution, multiple stressors are likely to be amplified by ongoing increases in temperature, changes in precipitation patterns, and decreases in snowpack (Mote et al. 2003; Hayhoe et al. 2004). Research suggests that a change in climate would be expected to shift species distributions as they expand in newly favorable areas and decline in marginal habitats (Kelly and Goulden 2008). When climate interacts with other stressors such as habitat fragmentation, additional threats to natural resources will likely emerge (McCarty 2001), including threats to the viability of steelhead populations. In particular, seasonal access to perennial, cool water habitats, especially smaller streams at higher elevations, will likely become more important to listed salmonids seeking refuge from unsuitable temperature and streamflow (Crozier et al. 2008).

World-wide CO<sub>2</sub> levels from human activities (*e.g.*, fossil fuel use) have been steadily increasing. Climate scientists have documented increases in global temperatures and predict continued increases (IPCC 2007). This warming is affecting large-scale atmospheric circulation patterns (Dettinger and Cayan 1995), and it is impacting climate at global, regional, and local scales (Zwiers and Zhang 2003; Cayan et al. 2008). Climate change is occurring and is accelerating (Battin et al. 2007; IPCC 2007).

Environmental monitoring data in the southwestern United States indicate changes in climatic trends that have the potential to affect steelhead life history strategy and habitat requirements. The southwest U.S. average annual temperature is projected to rise approximately 4° F to 10° F over the region by the end of the century (USGCRP 2009). Southern California is also experiencing an increasing trend in droughts, measured by the Palmer Drought Severity Index from 1958 to 2007 (USGCRP 2009). Snyder and Sloan (2005) project mean annual precipitation in central western California will decrease by about 3-percent by the end of the century. Small thermal increases in summer water temperatures have resulted in suboptimal or lethal conditions and consequent reductions in *O. mykiss* distribution and abundance in the northwestern United States (Ebersole et al. 2001). Thus, climate variability will likely be an important factor in evaluating how the *Status of the Species* is influenced by changing climate.

Wildfire frequency, intensity, and extent are all important parameters to consider when considering a changing climate and associated impacts to steelhead and their habitat. Changes in vegetation communities for this region will likely include increases in the amount of grassland and decreases in most other major vegetation communities (e.g., chaparral, riparian woodland). Based on a wildfire risk assessment in southern California, it was determined that the probability of large (>200-ha) fires ranges from a decrease of 29 to an increase of 28-percent (Westerling and Bryant 2008). The variation in range is due to the type of model used to make forecasts. Wildfires can have long-term benefits for fish habitat (such as producing influxes of spawning gravels to the stream), but in the short-term they can be catastrophic due to accumulation of fine sediment that negatively affects spawning, foraging and depth refugia (Boughton et al. 2007). Many of the foregoing climatic trends are likely to further degrade steelhead over-summering habitat in southern California by reducing stream flows and raising stream temperatures (Katz et al. 2013). Impacts to steelhead may result in increased thermal stress even though this species has shown to tolerate higher water temperatures than preferred by the species as a whole (Spina 2007). Conservation of existing steelhead populations will rely on identifying and providing unimpeded passage to the highest quality over-summering and spawning habitats which are expected to buffer habitat against changing climatic and hydrologic conditions. Habitat connectivity becomes as important as habitat quantity and quality when populations decrease and habitat is fragmented (Isaak et al. 2007).

#### 2.2.2 Designated Critical Habitat

Critical habitat for the SCCC 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 (70 FR 52522). PBFs are components of stream habitat that have been determined to be essential for the conservation of the SCCC 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 accumulations of 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.
- 3) 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.

- 4) Estuarine areas that provide uncontaminated water and substrates; food and nutrient sources to support steelhead growth and development; and connected shallow water areas and wetlands to cover and shelter juveniles.
- 5) Marine areas with sufficient water quality to support salmonid growth, development, and mobility; food and nutrient resources such as marine invertebrates and forage fish; and near-shore marine habitats with adequate depth, cover, and marine vegetation to provide cover and shelter.

Designated critical habitat for the SCCC DPS includes 1,249-miles of stream habitat and 3-square miles of estuary habitat within Monterey, San Benito, Santa Clara, Santa Cruz, and San Luis Obispo counties from the Pajaro River Hydrologic Sub-area south to the Estero Bay Hydrologic Unit (to but not including the Santa Maria River Hydrologic Unit). There are 30 occupied hydrologic sub-unit watersheds within the freshwater and estuarine range of the DPS. Critical habitat has a lateral extent as defined by the bankfull discharge, also known as a 2-year flood event.

#### 2.2.2.1 Status of Designated Critical Habitat

Streams designated as critical habitat in the SCCC DPS have the above PBF attributes to varying degrees, depending on the stream location and the impacts associated with the watershed. NMFS' most recent status reviews for SCCC steelhead (NMFS 2016) identified habitat destruction and degradation as serious ongoing risk factors for this DPS. Urban development, flood control, water development, and other anthropogenic factors have adversely affected the proper functioning and condition of some spawning, rearing, and migratory habitats in streams designated as critical habitat. Urbanization has resulted in some permanent impacts to steelhead critical habitat due to stream channelization, increased bank erosion, riparian damage, migration barriers, and pollution (NMFS 2016). Many streams within the DPS have dams and reservoirs that reduce the magnitude and duration of flushing stream flows, withhold or reduce water levels suitable for fish passage and rearing, physically block upstream fish passage, and retain valuable coarse sediments for spawning and rearing. In addition, some stream reaches within the DPS' designated critical habitat may be vulnerable to further perturbation resulting from poor land use and management decisions.

### 2.3 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 Marsh Street Bridge at San Luis Obispo Creek and encompasses the riparian corridor to the top of the bank. The action area is about 500-feet long, extending approximately 30-feet upstream and 380-feet downstream from the existing Marsh Street Bridge centerline.

### 2.4 Environmental Baseline

The “environmental baseline” refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. 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 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

#### 2.4.1 Status of Steelhead in the Action Area

Steelhead were recently observed within and just upstream of the action area (Freddy Otte, personal communication, 2020). On June 2, 2020, a juvenile steelhead was found within the action area and relocated just upstream to a large pool that contained an estimated 30 additional steelhead. There is also a large pool downstream of the action area with suitable rearing habitat. NMFS estimates that up to 50 juvenile steelhead may be present near the action area for the duration of construction activities (through October 31, 2020).

#### 2.4.2 Status of Critical Habitat in the Action Area

Aquatic habitat within the action area consists of freshwater rearing sites and a freshwater migration corridor. Vegetation composition along creek is greatly constricted due to urban development immediately adjacent to the channel. Vegetation mainly consists of valley foothill riparian, with includes Fremont cottonwoods (*Populus fremontii*), California sycamores (*Plantanus racemose*), white alder (*Alnus rhombifolia*), bluegum eucalyptus (*Eucalyptus globulus*) and arroyo willows (*Salix lasiolepis*). The understory consists of dense elm leaf blackberry (*Rubus ulmifolius*), blue elderberry shrubs (*Sambucus nigra*), California blackberry (*Rubus ursinus*), dense cape ivy (*Delairea odorata*), and English ivy (*Hedera helix*).

#### 2.4.3 Factors Affecting Species Environment in the Action Area and Vicinity

##### 2.4.3.1 Road Encroachment

Marsh Street traverses the creek within the action area. The location of the roads likely results in runoff from the road surfaces entering the creek during rainstorms, and a related reduction in water quality within the action area to an unknown degree. Runoff from road surfaces can contain dirt, oils, automotive fluids, and petro chemicals that are harmful to aquatic life, including steelhead (Spence et al. 1996). Road development located along the creek within the action area has contributed to the confinement of the stream channel and diminished breadth of riparian vegetation.

## **2.5 Effects of the Action**

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

## 2.5.1 Effects of the Action on Critical Habitat

### 2.5.1.1 Temporarily Altering Aquatic Habitat

Installing the water diversion in the work area is expected to temporarily prevent a portion of San Luis Obispo Creek from serving as a freshwater migration corridor for threatened steelhead for up to five months during the dry season (June 1 through October 31). The temporary loss of habitat is expected to have at least a few consequences, described as follows.

The temporary loss of habitat is expected to translate into temporary loss of aquatic macroinvertebrate forage within the action area. 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 as a food source is expected to be negligible because food from upstream sources would be available upstream and downstream of the isolated area via drift. Consequently, the temporary loss of aquatic macroinvertebrates as a result of dewatering activities is not expected to adversely affect forage opportunities within the area over the long term.

The temporary loss of habitat due to dewatering activities represents an adverse effect to habitat for steelhead, for at least a few reasons. First, the loss of habitat translates into a loss of a freshwater rearing area, which is essential for the growth and survival of juvenile steelhead (the life stage expected to be present at the time the proposed action is implemented). Without freshwater rearing areas, the habitat cannot fulfill the intended conservation role for the species. Second, the quality and availability of habitat in the action area has already been diminished and reduced due to anthropogenic factors. Therefore, the loss of habitat due to dewatering represents further loss of habitat. However, the area impacted by the diversion is relatively small compared to the amount and extent of habitat available elsewhere in San Luis Obispo Creek and, perhaps more importantly, the diversion will be removed following completion of the proposed action and the creek bed will be restored to pre-project conditions. Freshwater rearing habitats upstream and downstream of the action area will be unaffected by the proposed action and, therefore, continue providing the intended conservation role for the species. Overall, the loss of aquatic habitat associated with the water diversion will be temporary, and no long-term diminishment is anticipated from the proposed action in the physical capacity of the habitat to serve the intended functional role for steelhead.

### 2.5.2 Disturbance to the Creekbed

Although manipulation and disturbance of the creek bed can result in changes to channel morphology and hydraulic conditions that may create impediments to steelhead migration, review of the proposed action indicates the footprint and alignment of the new bridge are not expected to result in any substantive changes to channel morphology. As a result the habitat characteristics and conditions that are important to sustain steelhead migration through this reach are expected to remain the same. Based on these findings, the proposed action is not anticipated to appreciably reduce the functional value of the action areas as sites of freshwater migration or rearing.

### 2.5.3 Alteration of Water Quality

NMFS does not expect acute or chronic effects on aquatic habitat in San Luis Obispo Creek because increases in sedimentation and turbidity levels resulting from construction activities are expected to be minimal and temporary, for a few reasons. First, the proposed action includes a number of sediment and erosion-control measures to reduce the likelihood that sediment would be introduced to the wetted area such as silt fencing, fiber rolls, and barriers. These measures are expected to minimize the effects of sedimentation and turbidity on water quality. Second, the success of these measures has been documented during other similar projects (J. Ogawa, NMFS, 2019, personal communication). NMFS expects that the disturbance on the creek banks will not result in increases in sedimentation or turbidity concentrations that would adversely affect habitat.

Although the proposed action has the potential for temporary chemical contamination of San Luis Obispo Creek from machinery (e.g., fuels, oils, etc.) and drilling mud, such contamination is discountable due to BMPs. For instance, the BMPs require that all equipment is free of leaks, and that refueling, maintenance, and staging occur at least 100-feet from the creek. Additionally, the BMPs require all hazardous material spills be cleaned up immediately.

### 2.5.4 Disturbance to Streamside Vegetation

The proposed action has the potential to temporarily cause a discrete loss of shade and cover along San Luis Obispo Creek. This loss has the potential to translate into increased water temperatures (Mitchell 1999; Opperman and Merenlender 2004) and decreased water quality (Lowrance et al. 1985; Welsch 1991). However, the loss of vegetation as a result of the proposed action is expected to be temporary and confined to a small localized area. In addition, riparian vegetation will be replanted throughout the disturbed areas to minimize impacts from project construction, according to the proposed action. Based on NMFS' 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. Although Caltrans proposes to monitor replanted areas within the action area following completion of the project, the proposed action does not include a provision to notify NMFS of the success of the proposed plantings over time. Overall, the small amount of riparian vegetation temporarily affected by the proposed action is not expected to diminish the overall functional value of the migratory corridor or rearing habitat within the action area.

### 2.5.5 Effects of the Action on Threatened Steelhead

The expected effects of the action on threatened steelhead are related to the proposed capture and relocation of steelhead and temporary loss of rearing habitat.

As part of the water diversion, the workspace has been isolated with block-nets and cofferdams. If a steelhead makes it past these barriers again, it will need to be relocated. 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 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 colonize the area that is dewatered. The proposed action includes a description of two suitable pools where steelhead would be relocated.

In the event one or more steelhead are missed by the biologists and stranded in the dewatered area, steelhead mortality is likely. However, Caltrans proposes that qualified biologists will be used and will continuously monitor the placement of the diversion and dewatering in order to capture and relocate any stranded steelhead. Although Caltrans will document the capture and relocation of juvenile steelhead within the isolated area, the proposed action does not include a provision to notify NMFS of the number of steelhead that may be harmed or injured as a result of the proposed action.

The temporary loss of habitat owing to dewatering could translate into an adverse effect on juvenile steelhead, chiefly through the short-term loss of a freshwater corridor and rearing area, and displacement of steelhead, presuming presence of this species in the action area prior to dewatering. This could increase densities of steelhead in neighboring reaches of the creek outside the action area. However, based on our observations of the creek upstream and downstream of the action area, and our general familiarity of steelhead abundance, we anticipate that freshwater rearing areas exist in sufficient abundance outside of the action area to support displaced steelhead, without causing crowding. In addition, the diversion will contain pipes that will allow steelhead movement between habitats upstream and downstream of the isolated area, which appear to be similar quality as the affected area. The diversion would be removed and the site restored to pre-project conditions following completion of the proposed action. Overall, we anticipate the presence of the water diversion would affect only a small number of steelhead for a relatively short period of time during the dry season, with the effect primarily limited to an increased potential for crowding in neighboring reaches.

The effect of macroinvertebrate loss on juvenile steelhead is expected to be negligible because food from upstream sources would be available downstream of the isolated area via drift. Consequently, the temporary loss of aquatic macroinvertebrates as a result of the presence of the diversion is not expected to adversely affect steelhead.

Based on steelhead survey results of steelhead in the vicinity of the action area on San Luis Obispo Creek, NMFS expects no more than 50 juvenile steelhead will need to be relocated from the dewatered area. NMFS expects that 5 juvenile steelhead may be injured or killed as a result of the proposed action. This estimated mortality is based on NMFS' experience and knowledge gained on similar projects in San Luis Obispo County during the last several years. Based on NMFS' general familiarity of steelhead abundance in southern California in general, and San Luis Obispo 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 SCCC DPS of threatened steelhead. Therefore, the effects of the relocation on steelhead are not expected to give rise to population-level effects.

## **2.6 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 and 402.17(a)). 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 2.4).

NMFS is generally familiar with the activities occurring in the action area, and at this time is unaware of such actions that would be reasonably certain to occur. Consequently, no cumulative effects are likely, beyond the continuing effects of present land uses that are reasonably certain to occur into the future.

## **2.7 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 2.4) 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 diminish the value of designated or proposed critical habitat as a whole 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 effects 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, but precautions are in place to minimize, if not eliminate, the risk of injury and mortality, and downstream habitats are expected to suitably harbor the relocated steelhead. The expected effects associated with the habitat alteration due to dewatering will be short lived and localized.

Based on steelhead surveys and observations described in the environmental baseline section, NMFS concludes non-lethal take of no more than 50 juvenile steelhead that may be captured and relocated each construction season as a result of dewatering the action area, with a potential lethal take of no more than 5 out of the 50, thus the risk of mortality is low. Any juvenile steelhead present in the action area likely make up a small proportion of the SCCC DPS of steelhead.

Overall, the impacts to habitat are expected to be temporary and not translate into a reduction in the functional value of the habitat in the long term. The replanted areas are expected to create a functional riparian zone that provides cover for steelhead within the action area of San Luis Obispo Creek. Additionally, the Mitigation and Monitoring Plan will provide sufficient mitigation and enhancement of sensitive habitats to mitigate for permanent loss due to the proposed action. 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 maintain steelhead passage conditions in the localized area. Maintained passage conditions are expected to favor the viability of the threatened SCCC DPS of steelhead.



The action area could be subject to higher average summer temperatures and lower precipitation levels in the future as a result of climate change, which would lead to higher creek temperatures and longer dry periods. Reductions in the amount of precipitation would reduce the amount and extent of flow. For this project, the above effects of climate change are unlikely to be detected by the time construction is completed. The short-term effects of the proposed action would have completely elapsed prior to these climate-change effects. The long-term changes in the channel at the bridge site are confined to small areas and are unlikely to significantly magnify the likely climate change impacts.

## **2.8 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, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of the threatened SCCC DPS of steelhead or destroy or adversely modify designated critical habitat for this species.

## **2.9 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.

### **2.9.1 Amount or Extent of Take**

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows: All steelhead within the action area, expected to be no more than 50 juveniles that are captured or harassed during project activities. No more than 5 juvenile steelhead are expected to be injured or killed as a result of relocating the species. 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.

### **2.9.2 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 or destruction or adverse modification of critical habitat.

### 2.9.3 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 analysis provide the basis for the following reasonable and prudent measures:

1. Avoid and minimize harm and mortality of steelhead during relocation activities.
2. Prepare and submit a post-construction report regarding the effects of fish relocation and construction activities.

### 2.9.4 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’ biologist shall identify and evaluate the suitability of steelhead relocation habitat(s) prior to undertaking relocation activities. The biologist 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). One or more of the following methods shall be used to capture steelhead: seine, dip net, minnow trap, or by hand.
  - b. Captured salmonids will be relocated as soon as possible to an instream location in which suitable habitat conditions are present. Fish will be distributed between multiple pools if Caltrans’ biologists judge that overcrowding may occur in a single pool.
  - c. Caltrans 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 W. Ocean Blvd., Suite 4200, Long Beach, California 90802 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 whom found the specimen.

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

- a. Caltrans shall provide a written report to NMFS by January 15 of the year following the construction season. The report shall be sent to Jess Adams, NMFS, 501 West Ocean Boulevard, Suite 4200, Long Beach, California 90802. The reports will contain, at a minimum, the following information:
  - i. Construction related activities – The report will include the dates construction began and was completed; a discussion of any unanticipated effects or unanticipated levels of effects on steelhead, a description of any and all measures taken to minimize those unanticipated effects and a statement as to whether or not the unanticipated effects had any effect on steelhead; the number of steelhead killed or injured during project construction; and photographs taken before, during, and after the activity from photo reference points.
  - ii. Fish Relocation – The report will 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 any problem encountered during the project or when implementing terms and conditions; and (4) any effect of the proposed action on steelhead that was not previously considered.

## **2.10 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.

## **2.11 Reinitiation of Consultation**

This concludes formal consultation for the Marsh Street Bridge Replacement project. As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service 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 identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological 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 City of San Luis Obispo, California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service. Individual copies of this opinion were provided to Caltrans. The document will be available within two weeks at the NOAA Library Institutional Repository [<https://repository.library.noaa.gov/welcome>]. 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 and ESA regulations, 50 CFR 402.01 et seq.

**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, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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