



**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

March 31, 2021

Refer to NMFS No: WCRO-2020-02379

Paul Caron  
Senior Environmental Planner  
California Department of Transportation, District 7  
100 South Main Street, MS 16A  
Los Angeles, California 90012

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for the SR-33 Curve  
Widening and Barrier Replacement Project in Wheeler Gorge, Ventura County  
(EA: 07-33230)

Dear Mr. Caron:

On August 31, 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 widening of State Route (SR) 33 along North Fork Matilija Creek near Wheeler Gorge. The proposed action is within range of the endangered southern California (SC) 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 endangered SC 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 conditions to minimize and monitor incidental take of endangered steelhead.

Please contact Jess Fischer at [jessica.fischer@noaa.gov](mailto:jessica.fischer@noaa.gov) or (562) 533-6813 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: Mario Mariotta, Caltrans, D7 ([Mario.Mariotta@dot.ca.gov](mailto:Mario.Mariotta@dot.ca.gov))  
Copy to E-File: ARN 151422WCR2020CC00045



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


State Route 33 Curve Widening and Barrier Replacement near Wheeler Gorge, Ventura County

NMFS Consultation Number: WCRO-2020-02379  
Action Agency: California Department of Transportation

Affected Species and NMFS' Determinations:

<b>ESA-Listed Species</b>	<b>Status</b>	<b>Is Action Likely to Adversely Affect Species?</b>	<b>Is Action Likely to Jeopardize the Species?</b>	<b>Is Action Likely to Adversely Affect Critical Habitat?</b>	<b>Is Action Likely to Destroy or Adversely Modify Critical Habitat?</b>
Southern California steelhead ( <i>Oncorhynchus mykiss</i> )	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:** March 31, 2021

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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 February 24, 2020, NMFS received from the California Department of Transportation (Caltrans) a written request for formal consultation under section 7 of the ESA for the State Route (SR) 33 Curve Widening and Barrier Replacement Project near Wheeler Gorge. Caltrans is the lead federal agency as assigned by the Federal Highway Administration, effective December 23, 2016, for five years and pursuant to 23 USC 327. Caltrans' written request included a biological assessment (BA) describing the effects of the proposed action on endangered Southern California steelhead (*Oncorhynchus mykiss*) and designated critical habitat for the species in North Fork Matilija Creek.

Following review of the consultation request and BA, NMFS determined the information received was inadequate to initiate formal consultation, and in a letter to Caltrans dated March 17, 2020, requested the specific information that was necessary to initiate formal consultation.

On March 23, 2020, NMFS received Caltrans' letter responding to our letter with only a portion of the requested information that is necessary to initiate formal consultation. After review, NMFS determined the provided information was still insufficient to initiate consultation and sent another letter requesting additional information to Caltrans on March 25, 2020.

On May 1, 2020, Caltrans notified NMFS via email that changes had been made to the project description, though Caltrans did not describe the changes or provide any additional information. After 45 days passed since NMFS' March 25, 2020, letter with no response from Caltrans, NMFS withdrew the consultation request on May 11, 2020.

On August 31, 2020, more than five months after NMFS' letters dated March 17, 2020, and March 23, 2020, NMFS received a letter from Caltrans that responded to NMFS' March 23, 2020, letter and requested consultation be initiated. After reviewing Caltrans' written request,

changes to the proposed action, and supporting documents, NMFS determined that the information was still insufficient to initiate consultation and sent a letter to Caltrans that outlined the information needed on September 10, 2020. Caltrans sent NMFS a response letter 43 days later on October 23, 2020, and because that letter contained the information necessary to begin formal consultation, the consultation was initiated on the same day.

On January 6, 2021, 75 days after consultation was initiated, NMFS sent a letter to Caltrans requesting a timeline extension until May 21, 2021, to fully evaluate and analyze potential effects of the proposed action on endangered steelhead and designated critical habitat for the species and complete internal review of the draft biological opinion. In a letter dated January 28, 2021, Caltrans rejected NMFS' request for a mutually agreed upon timeline extension. After additional correspondence and evaluation of the timeline, NMFS suggested mid-April for an extension. Caltrans did not reject this proposal and April 17, 2021, was recorded as the extension date.

### **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).

#### **1.3.1 Overview of Proposed Action**

Caltrans proposes to construct a cantilever extension to SR-33 along 377.5 linear feet between post miles (PM) 18.94 and 19.01 in order to widen the curve in the road by 4.75 feet and update the barrier on the edge of the road to increase safety for drivers. To avoid confusion with barriers to steelhead or critical habitat, this roadway barrier is referred to as a "concrete guardrail" in this biological opinion. Construction will be completed in one season with activities adjacent to and in North Fork Matilija being confined to June 1 through October 31. Best management practices (BMP) are incorporated into the proposed action and will be implemented when construction activities are undertaken.

#### **1.3.2 Proposed Activities to Prepare the Work Area for Construction**

To prepare for construction, vegetation will be trimmed, the instream area for the work platform will be isolated with block nets, and the platform will be installed. Any steelhead within the affected area will be relocated. The block nets will be monitored for effectiveness throughout the duration of construction. Vegetation will be trimmed and removed to create access to the temporary construction area. Ten riparian trees will be permanently removed with 150 ft<sup>2</sup> of permanent impacts to white alder riparian woodland due to the widened roadway. Caltrans estimates there will be a total of 185 linear feet and 1550 ft<sup>2</sup> of riparian impacts.

Caltrans proposes to select steelhead relocation sites based on a combination of habitat and fish abundance data gathered in the action area. The creek will be surveyed for the following habitat conditions: stream features (run, step pool, riffle/pool), depth, velocity, dissolved oxygen, stream temperature, percent shade cover, and the presence of deep pools, boulders, in-stream exposed roots and/or bubble curtains. Within the isolated area, the locations and orientation of boulders will be recorded and documented to quantify the amount of refugia present in order to inform

creek restoration after project activities in the creek have been completed. Steelhead will be relocated to areas with sufficient shade and depth; overcrowding and mixing of age classes will be avoided. They will be relocated to downstream locations due to limited habitat just upstream, though upstream areas will be used as well if overcrowding seems likely.

Caltrans proposes to capture and relocate steelhead from 275 linear feet, or 3,800 ft<sup>2</sup> of North Fork Matilija Creek to avoid injury or mortalities during installation and use of the temporary work platform. Block nets will be installed to isolate the work area with the first net being installed at the upstream end of the action area and the second net being used as a seine to herd steelhead downstream out of the work area prior to installing the net at the downstream boundary of the instream work area. Fish passage will not be maintained for the duration of the proposed action. The nets will have mesh no larger than 1/8 inch. They will be anchored with bags filled with clean, washed gravel; stream materials will not be used for anchors. Disturbing vegetation and stream habitat features with the net placement will be avoided. Nets will be placed where they will remain the most secure, such as areas with lower flow rate, and uniform depth. Nets will not be installed perpendicular to the flow of the creek to lower the risk of fish becoming entrained. Channel modification will not occur.

Steelhead in the instream work area remaining after the installation of both nets will be captured with dip nets or seines and placed into temporary holding containers; electrofishing will not occur. Captured steelhead will be kept in containers for less than 10 minutes in uncovered containers, or less than 30 minutes in covered containers. Water temperature and aerators will be checked regularly to ensure conditions in the container remain safe for steelhead, and the behavior and condition of individuals will be monitored for signs of stress, injury, or mortality. Overcrowding will be avoided by using five gallon containers or larger and limiting the quantity of steelhead in the containers, though Caltrans does not specify what this threshold is. Steelhead handling duration will be minimized to the maximum extent possible. Steelhead will be released into the pre-determined relocation sites. Transfers will occur water-to-water in gently flowing, shallow water, to minimize stress. The water temperature of the container and relocation site will be measured, and if there is more than a two-degree Celsius difference, the water in the container will be slowly mixed with water from the relocation site to reduce acclimation stress.

Construction activities in the creek below the ordinary high-water mark will not commence until the successful capture of all steelhead in the isolated area has been confirmed and a visual survey in the stream has been conducted. At least three surveys will be conducted to verify that all steelhead have been captured.

Subsequently, temporary pedestrian wooden work platforms will be built over North Fork Matilija Creek at the base of the creek bank to protect critical habitat from potential project materials falling from the roadway during demolition, grading, and concrete guard rail construction. The platform will be 4-8 feet wide and 245-255 feet long, and installed over 1620 ft<sup>2</sup> of creek; of which 620 ft<sup>2</sup> is seasonally dry streambed. The platform will be elevated approximately one foot above the flowing creek. It will be constructed by hand with most of the supports resting in dry areas of the creek, though some will be in flowing water. A second

platform measuring 8-by-30 feet will be mounted onto the rock block wall, 20 feet above the creek and banks, overlapping with a section of the platform at the creek's surface and 8 linear feet of low flow channel. Caltrans proposes to submit the temporary platform plans to NMFS prior to construction for review, though no timeline is specified. No equipment will be present in the creek, though construction personnel will be walking in the creek for installation and removal of the temporary work platforms.

Caltrans proposes to implement the following BMP as part of the proposed action:

- Prior to the beginning of construction, a qualified fish biologist will survey the creek within and upstream and downstream of the action area.
- The biologist and resident engineer will coordinate to minimize disturbance of critical habitat.
- The biologist will monitor construction to verify that materials do not enter the creek. The biologist will be present during vegetation trimming, installation of the temporary platform, roadway demolition, ditch construction, concrete guardrail casting, and removal of the platform. The biologist will quantify and report the amount of disturbance and vegetation trimming that results from the proposed action.
- The biologist will take detailed photographs of the creek at established points before beginning construction to record the location and orientation of boulders and other stream elements. If any boulders are shifted by the proposed action, they will be restored to the original locations. Disturbance to the creek banks above the ordinary high water mark will be recontoured and stabilized after construction to prevent erosion into the creek.
- The biologist will write a detailed, site specific steelhead relocation plan, a detailed pre-construction habitat assessment and fish census report, a post-relocation effort report detailing the number of steelhead relocated, where they were relocated, and a post-construction habitat assessment of the project reach. Pre-assessment and relocation plans will be submitted to NMFS at least 4 weeks prior to construction for approval.
  - For the local fish census, the action area will be surveyed, steelhead observations will be counted, and approximate age or size class will be recorded using via snorkeling or underwater viewing device. No fish will be handled for the census.
  - The relocation report will be written within 1 week of relocation efforts occurring.
- Steelhead relocation will occur at least 3 days prior to the initiation of construction, with weather forecast and time of day being considered in an effort to reduce stress on captured steelhead.

a.



### 1.3.3 Proposed Construction Activities

The roadway adjacent to North Fork Matilija Creek will be widened by 4.75 feet with a cantilever overhang. Roadway demolition and excavation will occur on the road and all equipment will be at roadway elevation. The temporary work platform will be utilized by construction personnel during installation of the precast roadway slabs and construction of the new concrete guardrail. The top 1.33 feet of rock-block-wall below the grade of the road will be removed by saw-cutting the top blocks off. This man-made wall also functions as a channel wall for North Fork Matilija Creek and the top portion acted as a guardrail between vehicles and the creek prior to accidents that damaged it. The new cantilever roadway will be constructed of a precast slab anchored into the ground beneath the roadway. The 2.75 by 1 foot roadway overhang will result in 90 ft<sup>2</sup> of creek being permanently shaded along the section with the rock-block-wall. The 377.5 foot concrete guardrail will be cast in place on the southbound side of the road, closest to the creek. The earthen ditch on the northbound side of the road will be lined with concrete to convey spring water from the cliff to the creek faster, and minimizing the amount of water splashed onto the road.

Caltrans proposes to implement the following BMPs during construction:

- Plastic sheeting will be placed on the platform surface to capture fine particles, and sand or gravel bags will be placed at the toe-of-slope and landward edge of the platform.
- Biologists will regularly check nets to ensure they remain anchored, span the width of the stream, do not have holes, and do not have entrained steelhead. Caltrans proposes to detail the duration and frequency of monitoring in the steelhead relocation plan.
- Soil erosion BMPs include straw wattles, silt fences, and post-construction hydro-seeding.
- A containment system will be installed on the temporary scaffold including vacuums and spill kits in the event a spill occurs in the action area.

b.

### 1.3.4 Proposed Post-Construction Activities

Following construction, all fills associated with the proposed action, including stream protection BMP, platforms, and block nets will be removed from the creek within eight days after construction is complete. Nets will be removed last to prevent steelhead from entering the action area before it is clear of construction personnel and materials. Caltrans proposes to replace seven of the trees removed for construction, but has not provided a revegetation or monitoring plan and therefore the details of the plan, including the planting-success criteria, are unknown to NMFS. Cut tree trunks will be carefully placed in the creek to provide refugia for steelhead and replicate natural turnover of riparian vegetation in the creek. Steelhead mortalities that occur during the proposed action will be documented by the biologist and notification will be sent to NMFS within two business days. Documentation will include pictures, a report of the circumstances of

the occurrence (time, ongoing construction activities in proximity of occurrence, specific location), and the storage of the dead specimen. We considered, under the ESA, whether or not the proposed action would cause any other activities and determined that it would not.

## **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(s) of critical habitat for (species) use(s) 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 each species 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 endangered southern California (SC) Distinct Population Segment (DPS) of steelhead extends from the Santa Maria River in Santa Barbara County to the Mexican border (inclusive). NMFS characterized the abundance of steelhead in the DPS when the species was originally listed (August 18, 1997, 62 FR 43937) and cited this information as the basis for the re-listing of the SC DPS of steelhead as endangered (May 3, 2006, 71 FR 834). Estimates of historical (pre-1960s) and more recent (1997) abundance show a precipitous drop in numbers of spawning adults for major rivers in the southern California DPS. An updated status report states that the chief causes for the numerical decline of steelhead in southern California include urbanization, water withdrawals, channelization of creeks, human-made barriers to migration, and the introduction of exotic fishes and riparian plants (Good et al. 2005), and the most recent viability assessments and status reviews indicate these threats are essentially unchanged (NMFS 2011; Williams et al. 2011; NMFS 2016; Williams et al. 2016). Historical data on steelhead numbers for this region are sparse. The historic and recent steelhead abundance estimates, and percent decline are summarized in Table 1. The run-size estimates illustrate the severity of the numerical

decline for the major rivers within range of the SC DPS of steelhead (Good et al. 2005; NMFS 2011; Williams et al. 2011; NMFS 2016; Williams et al. 2016).

Stream surveys to document the species' current pattern of occurrence concluded that of the 46 watersheds in the DPS which steelhead occupied historically, *O. mykiss* currently occupy only about 40% to 50% of these watersheds (Boughton et al. 2005). Fish surveys by NOAA's Southwest Fisheries Science Center (SWFSC), direct observations by NMFS biologists, and anecdotal information from local biologists working on major rivers and creeks throughout the DPS suggest that although steelhead populations continue to persist in some coastal watersheds, the population numbers are exceedingly small (Good et al. 2005; Williams et al. 2011; Williams et al. 2016). On a positive note, there have been observations of steelhead recolonizing vacant watersheds during years with abundant rainfall, notably San Mateo Creek and Topanga Creek (Good et al. 2005; Bell et al. 2011) including a recent observation of *O. mykiss* in San Mateo Creek (NMFS 2017). Also, California Department of Fish and Wildlife discovered an adult female steelhead (TL 57.46 cm) on April 26, 2013, during a flow-rate survey in Conejo Creek (Camarillo, California).

NMFS reviews the status and viability of the SC DPS of steelhead on the basis of available information (including new information) about the species abundance, population growth rate, spatial structure, and diversity (McElhany et al. 2000) every five years as required by the ESA. In the last two status reviews, NMFS concluded that the risk of extinction of the endangered SC DPS of steelhead was unchanged (NMFS 2011, 2016).

Table 1. Historical and recent abundance estimates of adult steelhead in the Southern California DPS. Data are from Good et al. (2005); (NMFS 2011), and NMFS SWR redd surveys 2009-2011 (R. Bush, NMFS, personal communication).

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

### 2.2.1.1 General Life History of Steelhead

*O. mykiss* possess 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 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 sand and smaller 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

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 SC steelhead in freshwater streams include damage to spawning redds and washing away of incubating eggs due to higher winter stream flow (USGCRP 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).

The Thomas Fire impacted SC steelhead viability through direct and indirect effects to PBF mainly in the Ventura River Watershed relative to the Santa Clara River Watershed. The fire burned nearly 80 miles of designated critical habitat. In general, fire impacts include changes in geomorphology (e.g., sediment filled pools and riffles), decreased pool depth, increased solar radiation owing to losses in riparian cover, changes in water quality, increased dissolved nutrients and pH, and changes in pool:riffle ratios (Dunham et al. 2003; Earl and Blinn 2003; Aha et al. 2014). However, these effects may be pronounced or muted depending on the fire burn severity, timing of subsequent rainfalls (e.g., January 9, 2018, storm event), intensity and duration of ensuing rains, and volume of debris and sediment entering streams.

After a fire disturbance, decreased water quality and loss of SC steelhead habitat can be facilitated by the following physical, chemical and biological changes (USFS 2018):

- Increased surface flows resulting in flooding
- Increased sedimentation leading to changes in food web structure, reducing primary productivity, with effects to grazers and other benthic macroinvertebrates and their predators (e.g., fish)

- Changes to water quality and chemistry due to ash, smoke, nutrients, and hazardous materials
- Increased water temperature due to reduction/elimination of riparian cover and increased fine sediment loads
- Scouring of riparian/aquatic vegetation
- Changes in streambed/pool habitat due to geomorphic movement (debris flows)
- Mass failure of culverts leading to stream habitat degradation
- Flushing and extirpation of aquatic biota with limited ability to recolonize rivers, including fish, downstream during and after flood events, respectively.

Debris flows are among the most hazardous consequences of rainfall on burned hillslopes (WERT 2018). The January 9, 2018, storm event triggered a debris flow when Matilija Canyon received approximately six inches of rain in 24 hours. This storm event initiated several debris flows within the Santa Ynez Mountains, and consequently inundated areas within Montecito and Carpinteria in Santa Barbara County. The overall peak runoff throughout impacted areas will likely increase relative to unburned areas for the 2-year and 10-year recurrence intervals.

The Thomas Fire affected 11% of total designated critical habitat within the range of the SC DPS of steelhead; burned critical habitat was mainly in the Ventura River Watershed (56%) and to a lesser degree in the Santa Clara River Watershed (18%). Indirect effects from the fire (e.g., mudflow, mudslides) likely increase the extent and amount of habitat destruction downstream to the estuary-ocean interface by altering PBF essential to the conservation of a species including a delay in development of such features, which the species relies upon during various life stages.

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).

### 2.2.2 Designated Critical Habitat

Critical habitat for the SC DPS of steelhead was designated on September 2, 2005, and consists of the stream channels listed in (70 FR 52488). Critical habitat has a lateral extent defined as the width of the channel delineated by the ordinary high-water line as defined by the Corps in 33 CFR 329.11, or by its bankfull elevation, which is the discharge level on the streambank that has a recurrence interval of approximately 2 years (September 2, 2005, 70 FR 52522). PBF are components of stream habitat that have been determined to be essential for the conservation of the SC 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:

- a. **Freshwater spawning sites** with sufficient water quantity and quality and adequate substrate (i.e., spawning gravels of appropriate sizes) to support spawning, incubation and larval development.
- b. **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 to support growth and development; food and nutrient resources such as terrestrial and aquatic invertebrates and forage fish; 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.
- c. **Freshwater migration corridors** free of obstruction and excessive predation with adequate water quantity to allow for juvenile and adult mobility; cover, shelter, and holding areas for juveniles and adults; and adequate water quality to allow for survival.
- d. **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.
- e. **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.

Streams designated as critical habitat in the SC steelhead DPS contain the above PBF (PBF 1-3) in differing amounts and to varying degrees, depending on the particular stream, the characteristics of the watershed, and the degree that the watersheds are impacted by anthropogenic factors. Perennial streams with PBF and conditions suitable for steelhead are fewer in the southern portion of the DPS compared to the northern portion. Some of this is due to the amount of coastal development and because there is generally less rainfall in the southern region. During the summer many creeks at the southern edge of the range become intermittent in sections or dry completely (in some cases this occurrence is natural and in other cases it is due to



anthropogenic factors), and stream temperatures may become a factor in terms of suitability for rearing steelhead. Overall, steelhead over-summering habitat is thought to have a restricted distribution more so than winter spawning and rearing habitat in the SC steelhead DPS (Boughton et al. 2006).

Streams with high conservation value have most or all of the PBF of critical habitat and extensive areas that are suitable for steelhead spawning, rearing, and migration (NMFS 2012). Streams with medium or low conservation value are less suitable for steelhead in terms of spawning, rearing, and migration, and have less of the PBF necessary for steelhead survival growth and reproduction, generally due to anthropogenic factors. Both the Ventura River and Santa Clara River watersheds have been found to have high conservation value for the survival and recovery of the SC DPS of steelhead. While many streams in the DPS have been found to have high conservation value for survival and recovery of the species, the spawning, rearing, and migratory habitat within the DPS are heavily impacted by dams, diversions, and human development. As a result, much of the available habitat has become severely degraded, and habitat degradation has been a main contributing factor to the current endangered status of the DPS (Good et al. 2005). The most recent status reviews found that these threats have remained essentially unchanged (Williams et al. 2011; National Marine Fisheries Service (NMFS) 2016; Williams et al. 2016).

#### 2.2.2.1 Status of Critical Habitat

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 created physical barriers and hydrological impediments for adult and juvenile steelhead migrating to and from spawning and rearing habitats. Likewise, construction and 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 use) have 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.*, NMFS 2005; see also Spina et al. 2005). 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 (Williams et al. 2011).

The condition of these remaining wetland habitats is largely degraded, with many wetland areas at continued risk of loss or further degradation. Although many 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 (NMFS 2016) 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.

Climate-driven changes to stream and estuarine environments have the potential to significantly impact critical habitat for 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 endangered salmonids seeking refuge from unsuitable temperature and streamflow (Crozier et al. 2008).

While continued changes in climate are highly likely, estimating the magnitude of the change is more difficult the further into the future one must go. For example, increases in air temperatures globally are more certain than increases in air temperature in a particular watershed in California. Increases in global air temperatures may shift wind patterns, and these changes, in combination with regional topography, may affect how air temperatures in a particular watershed change in relation to changes in global air temperatures.

Environmental monitoring data in the southwestern United States indicate changes in climatic trends that have the potential to affect steelhead critical habitat. 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 habitat conditions and consequent reductions in *O. mykiss* distribution and abundance in the northwestern United States (Ebersole et al. 2001). Thus, climate variability is an important factor in evaluating how the status of the species and critical habitat is influenced by changing climate.

## **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 proposed action will take place in North Fork Matilija Creek, which is designated critical habitat for SC steelhead. The action area includes the linear extent (upstream and downstream) of the SR-33 curve to be widened above the rock-block wall between PMs 18.94 and 19.01, and encompasses the riparian corridor to the top of the bank. The rock-block wall is 100-feet long, 35 feet of which functions as a channel wall for North Fork Matilija. The majority of the creek bed in the action area is bedrock or boulder and extends approximately 275 feet. This section of creek is expected to have low flow during the time of the proposed action.

## **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 Critical Habitat in the Action Area**

Critical habitat within the action area of North Fork Matilija Creek consists of a complex array of pools and pocket water, with short riffles and runs between pools. The active channel of the creek is about 20 to 30-feet wide and is comprised of gravel, cobble, and boulders. North Fork Matilija Creek drains part of the Western Transverse ranges of southern California, a tectonically active area (Florsheim et al. 1991). As a result, debris slides are common, such as those following the Thomas fire in winter 2018, and several large boulders are present through the action area, creating step pools and hydraulic breaks for rearing, migrating, and spawning steelhead. Riparian trees within the action area include white alder and riparian woodland, though a portion of this is maintained by Caltrans, leaving the canopy open relative to adjacent areas of the creek which have a dense canopy cover providing shade over the creek. In the action area, the threat to SC steelhead from climate change is likely to include a continued increase in summer air temperatures, more extreme heat waves, and an increased frequency in drought (McClure et al. 2003). Overall, the habitat in the action area provides most, if not all, of the PBFs necessary for the growth and survival of steelhead (i.e., cover, shelter, pools, riparian, and migratory habitat).

### **2.4.2 Status of Steelhead in the Action Area**

Juvenile steelhead abundance was surveyed near the action area from 2006 to 2012 (Normandeau Associates Inc. 2015). The annual number of juvenile steelhead observed via

snorkeling ranged from 26 to 232 steelhead within two half-mile stream reaches of pool habitat. In April 2008, while Caltrans implemented emergency SR-33 repairs at Wheeler Springs, near the action area, 782 steelhead fry and 32 yearling steelhead were found within a 350-foot section of the creek and relocated (Swift and Mulder 2008). There were 16 mortalities associated with this capture and relocation effort (2% mortality). Redd surveys from 2008 to 2017 declined significantly as well as the drought intensified (Casitas Municipal Water District 2017). During capture-relocation efforts for a recent Caltrans project a few miles downstream, 2 juvenile steelhead were found in 2017, and none in 2018 (GPA Consulting 2018). Based on a known distribution provided by Normandeau Associates Inc. (2015), Swift and Mulder (2008), GPA Consulting (2018), and habitat within the action area (i.e., pools), NMFS estimates that up to 50 juvenile steelhead may be present in the area to be isolated. Since downstream migration through the project area is not possible during construction activities and juvenile steelhead may accumulate above the upstream block net, NMFS estimates that 10 or fewer juveniles will need to be relocated. Thus, NMFS estimates that up to 60 juvenile steelhead will need to be relocated. Adult steelhead are not expected to be present within the action area during the time of construction activities (June 1 to October 31).

#### 2.4.3 Threats to Steelhead and Critical Habitat in the Action Area

##### 2.4.3.1 Migration Impediment

An impediment to steelhead migration exists downstream of the action area within the Ventura River at the Robles Diversion fishway. The fishway was completed in 2004, but the effectiveness of the fishway for passing steelhead without delay has not been reliably assessed. Videotaped sightings of adult steelhead passing upstream through the fishway were recorded during winter 2007 and 2008, so it is believed that the fishway provides some level of passage for steelhead past the diversion. Currently, it is unknown if, and to what extent, steelhead may be delayed at the fish way during their upstream migration. Monitoring and 5-year evaluations continue for the fishway (Casitas Municipal Water District 2017). As a result, overall steelhead productivity and rearing capacity has the potential to be reduced in North Fork Matilija Creek including the action area.

##### 2.4.3.2 Road Encroachment

North Fork Matilija Creek within the action area receives runoff from SR-33; runoff from road surfaces can contain dirt, oils, automotive fluids, and petrochemicals that are harmful to aquatic life, including steelhead (Spence et al. 1996). Additionally, the placement of the road adjacent to the creek required installation of the rock-block-wall along the edge of the creek, which has reduced the ability of the creek to meander and diminished the riparian zone on the eastern bank.

## 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 block nets in the work area is expected to temporarily prevent a portion of North Fork Matilija Creek from serving as a freshwater migration corridor and freshwater rearing site for endangered steelhead during one 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. 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 access to aquatic macroinvertebrates as a result of isolation activities is not expected to adversely affect forage opportunities within the area over the long term.

The temporary loss of habitat due to isolating a portion of the creek 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 isolation represents further loss of habitat. However, the area impacted by the nets and platform is relatively small compared to the amount and extent of habitat available elsewhere in North Fork Matilija Creek and, perhaps more importantly, the nets and platform 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 isolation 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.

### 2.5.1.2 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 placement of the block nets and work platforms are not expected to result in any change 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. The proposed action is not anticipated to appreciably reduce the functional value of the action area as a site of freshwater migration or rearing.

#### 2.5.1.3 Alteration of Water Quality

NMFS does not expect acute or chronic effects on aquatic habitat in North Fork Matilija Creek because substantive 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. Second, the proposed BMP that are intended to preclude equipment leaks from reaching the creek channel are expected to be efficient in this regard. As a result, we don't expect water-quality alterations due to equipment leaks. Although accidental spills of chemical contaminants are speculative, the proposed action incorporates measures to prevent a spill reaching the creek channel.

#### 2.5.1.4 Disturbance to Streamside Vegetation

The proposed action has the potential to temporarily cause a discrete loss of shade and cover along North Fork Matilija Creek. This loss has the potential to translate into increased water temperatures (Mitchell 1999; Opperman and Merenlender 2004) and decreased water quality (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. Based on NMFS' experience observing the response of riparian vegetation to human-made disturbances, the riparian zone is expected to recover from the project one to two years following the completion of construction. Notwithstanding this expectation, the proposed action does not include monitoring the replanted areas within the action area following completion of the project or other provision to notify NMFS of the performance of the proposed plantings over time.

### 2.5.2 Effects of the Action on Endangered Steelhead

The expected effects of the action on endangered steelhead are related to the proposed isolation of a portion of North Fork Matilija Creek within the action area. What follows is a discussion of these effects, including discussion of the expected effects due to the proposed capture and relocation of steelhead.

#### 2.5.2.1 Habitat Isolation Consequences for Juvenile Steelhead

Habitat isolation is expected to have two principal consequences: (1) a loss of service to juvenile steelhead through the loss of living space, and (2) stresses related to handling and crowding owing to the capture and relocation. Each of these is explained for more fully as follows.

*Loss of Living Space.*—The temporary loss of habitat owing to isolation could translate into an adverse effect on juvenile steelhead, chiefly through the short-term loss of a freshwater rearing area and displacement of steelhead, presuming presence of this species. 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 the number of steelhead

experiencing a loss of service will be small. Although movement between the upstream and downstream portions of the action area will not be possible during instream construction, we anticipate relatively little movement of steelhead owing to the expected low abundance of the species in North Fork Matilija Creek. Overall, we anticipate the presence of the nets and platforms would affect only a small number of steelhead for a relatively short period of time during the dry season.

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. The 90 ft<sup>2</sup> increase in shading over North Fork Matilija due to the expanded roadway could translate to a decrease in primary productivity and in turn a decrease to macroinvertebrates. However, any decrease is expected to be negligible owing to macroinvertebrate abundance outside the action area. The presence of the work platform in the creek may translate to a decrease in primary productivity as well, though the effects will be temporary, lasting no more than one dry season (June 1 to October 31). Caltrans will send NMFS plans for the temporary work platforms prior to construction for review, but does not specify a timeline for submittal.

*Capture and Relocation.*—Although isolating the action area has the potential to harm or kill rearing juvenile steelhead, the proposed action includes precautions to reduce the likelihood of harm and mortality. Prior to installation of the work platform, biologists will capture and relocate steelhead to the nearest suitable habitat downstream of the work space. Caltrans proposes that biologists will be experienced with steelhead handling, and will continuously monitor the placement of the nets and platform to capture and relocate stranded steelhead.

Although Caltrans will document the capture and relocation of juvenile steelhead within the isolated area, the proposed action does not include a timeline for notifying NMFS of the number of steelhead that may be harmed or injured as a result of the proposed action, with the exception of steelhead mortalities of which Caltrans proposes to notify NMFS within 2 days. Caltrans provides general criteria that will be used to select relocation areas, but will submit a more detailed relocation plan at least 4 weeks prior to construction for NMFS review. Based on our experience and familiarity with selection of relocation areas, the sites selected for relocating juvenile steelhead should have ample habitat.

Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas, is expected to be temporary, if experienced, because when the proposed action is finished steelhead will be able to colonize the area that had been isolated. In addition, the available information indicates abundance of juvenile steelhead in the action area is quite low and not likely to produce crowding effects.

Based on steelhead survey results and anecdotal observations of juvenile steelhead in the vicinity of the action area in North Fork Matilija Creek, NMFS expects no more than 55 juvenile steelhead will need to be relocated. 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 Ventura County during the last several years. Based on NMFS' general familiarity of steelhead abundance in southern California in general, and

Ventura 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.

#### 2.5.2.2 Consequences of Physical Habitat Alterations

The sources of physical alteration to the habitat for steelhead involve the loss of riparian habitat. The expected consequences of the alterations for steelhead due to this activity is described as follows, and have been informed from the anticipated consequences to designated critical habitat for steelhead that we described earlier.

The loss of shade and cover along North Fork Matilija Creek is expected to have only temporary consequences for steelhead. This is because the loss of vegetation as a result of the proposed action is expected to be short lived and confined to a small localized area. In addition, riparian vegetation will be replanted throughout the disturbed areas to minimize impacts from project construction as well as cut tree trunks placed in the stream to mimic natural turnover. The expected consequences to steelhead involve experiencing a reduction in overhead shade and cover, potentially increasing risk of avian predation to individual fish until the riparian vegetation recovers to pre-project condition, though the in-stream habitat created by the tree trunks would provide refugia. In addition, the widened roadway will overhang the creek by 90 ft<sup>2</sup>, providing permanent shading.

## 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 in the action area and at this time is unaware of such actions that would be reasonable certain to occur. Consequently, no cumulative effect is likely, beyond the continuing effects of present land use 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 upstream and downstream habitats are expected to suitably harbor the relocated steelhead. The expected effects associated with the habitat alteration due to platform installation 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 55 juvenile steelhead that may be captured and relocated during the construction season as a result of isolating the action area, with a potential lethal take of no more than 5 out of the 55, 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 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 and, along with the installation of the cut tree trunks, cover for rearing steelhead within the action area of North Fork Matilija. 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 at least maintain existing steelhead passage and rearing characteristics and conditions in the localized area. Maintained passage conditions are expected to favor the viability of the endangered SC 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 are expected to have completely elapsed prior to these climate-change effects.

## **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 endangered SC DPS of steelhead and or destroy or adversely modify its designated critical habitat.

## **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 55 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).

1. Avoid and minimize mortality of steelhead during relocation activities.
2. Minimize the amount and extent of temporary and permanent changes in the quality and quantity of riparian and instream habitat for steelhead.
3. 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. To avoid predation, the biologist shall have at least two containers and segregate captured young-of-year fish from larger age classes and other potential aquatic predators.
  - b. Caltrans shall contact NMFS (Jess Fischer, 562-533-6813 or [jessica.fischer@noaa.gov](mailto:jessica.fischer@noaa.gov)) 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 Fischer, 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. Sixty days prior to implementing the proposed action, Caltrans shall submit the temporary platform plans to NMFS for review and potential comment. Caltrans shall revise the plan in response to NMFS' comments and then implement the plan consistent with the provisions therein. Plans shall be sent to Jess Fischer, [jessica.fischer@noaa.gov](mailto:jessica.fischer@noaa.gov), or NMFS, 501 West Ocean Boulevard, Suite 4200, Long Beach, California 90802.
  - b. Sixty days prior to implementing the proposed action, Caltrans shall submit the revegetation and monitoring plan, which includes provisions to determine the success of the plantings, to NMFS for review and potential comment. Caltrans shall revise the plan in response to NMFS' comments and then implement the plan consistent with the provisions therein. The plan shall be sent to Jess

Fischer, jessica.fischer@noaa.gov, or NMFS, 501 West Ocean Boulevard, Suite 4200, Long Beach, California 90802.

3. The following terms and conditions implement reasonable and prudent measure 3:
  - 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 Fischer, jessica.fischer@noaa.gov, or NMFS, 501 West Ocean Boulevard, Suite 4200, Long Beach, California 90802. The reports shall 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 fish 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.
    - iii. Revegetation – The report will include a description of the locations seeded or planted, the area revegetated, proposed methods to monitor and maintain the revegetated area, criteria used to determine the success of the plantings, and pre-and post-planting color photographs of the revegetated area. Caltrans shall provide the results of the vegetation monitoring by January 15 following completion of each annual site inspection following completion of the project. Each report shall include color photographs taken of the project area during each inspection and before implementation of the proposed action.

## **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).

- Stormwater discharges to streams may carry various pollutants that are toxic to salmonids. To aid in recovery of steelhead, Caltrans should include bioretention areas or

other landscape features adapted to treat stormwater runoff from SR-33 to North Fork Matilija Creek at this construction site.

- In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, NMFS requests notification of the implementation of any conservation recommendations. This notification shall be submitted to Jess Fischer, NMFS 501 West Ocean Blvd., Suite 4200, Long Beach, California 90802.

## **2.11 Reinitiation of Consultation**

This concludes formal consultation for the SR-33 Curve Widening 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 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, 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, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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