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

August 8, 2022 **Refer to NMFS No**: WCRO-2021-02871

Barrett Holland
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 and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the South Bay Boulevard Bridge Replacement Project at Los Osos Creek, San Luis Obispo County, California (BRLO-5949 (137))

Dear Mr. Holland:

Thank you for your letter of October 20, 2021, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the South Bay Boulevard Bridge Replacement Project. Caltrans is the lead federal agency as assigned by the Federal Highway Administration, pursuant to Memoranda of Understanding 23 USC 326 and 327. The proposed action is within range of the threatened south-central California coast (S-CCC) Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) and designated critical habitat for the species.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act [16 U.S.C. 1855(b)] for this action.

On July 5, 2022, the United States District Court for the Northern District of California issued an order vacating the 2019 regulations adopting changes to 50 CFR part 402 (84 FR 44976, August 27, 2019). This consultation was initiated when the 2019 regulations were still in effect. As reflected in this document, we are now applying the section 7 regulations that governed prior to adoption of the 2019 regulations. For purposes of this consultation, we considered whether the substantive analysis and its conclusions regarding the effects of the proposed actions articulated in the biological opinion and incidental take statement would be any different under the 2019 regulations. We have determined that our analysis and conclusions would not be any different.

The biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of the threatened S-CCC 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 terms and conditions to minimize and monitor incidental take of threatened steelhead.

Please contact Jess Fischer at (562) 533-6813 or jessica.fischer@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: e-file FRN 151422WCR2021CC00224

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

South Bay Boulevard Bridge Replacement Project at Los Osos Creek

NMFS Consultation Number: WCRO-2021-02871
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 (*Oncorhynchus mykiss*)	Threatened	Yes	No	Yes	No

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Groundfish FMP	Yes	No
Coastal Pelagic Species FMP	Yes	No

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

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Date: August 8, 2022

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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 U.S.C. 1531 et seq.), as amended, and implementing regulations at 50 CFR part 402.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR part 600.

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 2 weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at the California Coastal NMFS office.

1.2. Consultation History

On October 25, 2021, NMFS received from the California Department of Transportation (Caltrans) a written request for formal consultation under section 7 of the ESA for the South Bay Boulevard Bridge Replacement Project. Caltrans is the lead federal agency as assigned by the Federal Highway Administration (FHWA), pursuant to two Memoranda of Understanding, 23 USC 326 and 327, which allows Caltrans to approve Categorical Exclusions and Environmental Assessments. The County of San Luis Obispo (County) is the applicant. Caltrans' written request included a biological assessment (BA) describing the effects of the proposed action on threatened south-central California coast steelhead, designated critical habitat for the species in Los Osos Creek, and EFH for Pacific Groundfish and Coastal Pelagic Species.

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 November 29, 2021, requested the specific information that was necessary to initiate formal consultation. On December 28, 2021, NMFS received Caltrans' response letter with a portion of the requested information necessary to initiate consultation. In a meeting NMFS and Caltrans had a phone call on January 18, 2022, NMFS and Caltrans discussed the outstanding information needed to begin formal consultation. Several exchanges of information regarding Caltrans' proposed dewatering and temporary structures, and cumulative effects, followed that meeting. Consultation was initiated on January 31, 2022.

On May 5, 2022, NMFS requested Caltrans' concurrence to extend the consultation timeline 60 days, which would allow NMFS to fully evaluate potential effects to threatened steelhead,

designated critical habitat, and EFH, and complete internal review of the draft biological opinion. Caltrans concurred with the extended consultation duration, and August 14, 2022, was recorded as the date that formal consultation would be concluded.

On July 5, 2022, the United States District Court for the Northern District of California issued an order vacating the 2019 regulations adopting changes to 50 CFR part 402 (84 FR 44976, August 27, 2019). This consultation was initiated when the 2019 regulations were still in effect. As reflected in this document, we are now applying the section 7 regulations that governed prior to adoption of the 2019 regulations. For purposes of this consultation, we considered whether the substantive analysis and its conclusions regarding the effects of the proposed actions articulated in the biological opinion and incidental take statement would be any different under the 2019 regulations. We have determined that our analysis and conclusions would not be any different.

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 (see 50 CFR 402.02).

1.3.1. Overview of Proposed Action

Caltrans proposes to replace the seismically deficient South Bay Boulevard Bridge over Los Osos Creek. The proposed replacement bridge will consist of a two-span concrete bridge on pile foundations with a center support pier. It will be longer than the existing structure (300 feet compared to 189 feet existing) and wider (50 feet compared to 37 feet existing). Construction will be completed in two seasons with work in Los Osos Creek being confined to June 1 through October 31 of a given year. Best managements 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, some pickle weed saltmarsh will be cleared (0.11 acres total), cofferdams will be placed on the edges of Los Osos Creek, temporary trestles will be placed within the wetted channel and utilities will be relocated. Fifty linear feet will be dewatered on each bank (1,250 ft^2 each) during the first season for construction just east of the existing bridge for construction of the new bridge. Forty linear feet (1,200 ft^2 on north bank; 600 ft^2 on south bank) will be dewatered on each bank during the second construction season underneath the existing bridge for demolition. These dewatered areas will be contained within cofferdams constructed of sheet piles, gravel-filled bags, or water-filed bladder dams. Sheet piles will be pushed or vibrated to depth; not driven. Cofferdam instillation will be conducted at low tide to minimize the need for steelhead capture and relocation. Caltrans proposes to maintain creek flow throughout construction.

Any steelhead within cofferdam areas will be captured with nets. Steelhead will be handled with extreme care and kept in water during relocation activities. All captured fish will be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding. To avoid predation, at least two containers will be used to segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured steelhead will be relocated, as soon as possible, to an instream location with suitable habitat conditions to allow for adequate survival of

transported fish and fish already present, though Caltrans does not define the parameters of suitable instream conditions.

Relocation sites will depend on whether there is active construction activity at the time. If there is no active construction activity, steelhead may be relocated from the cofferdam to the creek channel. If there is active construction activity, steelhead will be relocated from the cofferdam to the creek channel at least 300 feet upstream, in an area with adequate surface water where temperature and dissolved oxygen is suitable. Captured steelhead will be relocated at least 300 feet downstream of work areas if adequate quality and volume of surface water is not present upstream. Following steelhead relocation, cofferdam areas will be pumped dry and pumped periodically as needed; pump intakes will be screened. Surface water will be pumped into a tank and will be allowed to settle to reduce suspended solids prior to discharge to Los Osos Creek.

Piles for the temporary trestles will be installed in the wetted channel via vibration, oscillation, or rotation methods. Pile driving will only be used to test the piles with 7-10 strikes per pile, with a total of 30 strikes per day (3-4 piles will be load tested per day). The cumulative SEL at 10 meters is estimated up to 184.77 dB with 30 strikes per day, depending on materials used (steel or timber). Physical injury to fish is expected within 7 meters (23 ft) of piles during load testing. Each work trestle will consist of 35 1.5-foot diameter piles (70 piles total) installed within the high tide line. Caltrans anticipates steelhead will avoid the area during pile instillation and does not include any measures to minimize harassment or injury to steelhead, though sound pressure level monitoring is proposed. Each trestle will result in 2,450 ft^2 of temporary shading during each 5-month dry season. Only one trestle will be placed each construction season.

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

- Construction roads will be swept and cleaned of sediment and debris, particularly before predicted rainfall events.
- Excavated materials deposited or stored onsite temporarily, including sediment excavated from the creek bed, will not be placed in or adjacent to open water channels or wetlands and will be wetted and/or covered as necessary to prevent runoff and erosion.
- Fueling and washing equipment will be conducted in designated upland areas.
- Native grasses and vegetation will be established in areas disturbed by construction to minimize erosion as soon as possible after disturbance.
- An authorized biologist will monitor installation of the approved dewatering containment system and all dewatering activities that could impact steelhead or their habitat. The biologist will use seines and dip-nets to capture and relocate steelhead.
- Dewatering operations will be halted periodically to allow the biologists to seine the exclusion area for additional trapped steelhead.
- Equipment will not be operated directly within tidal waters or Los Osos Creek.
- An impact hammer will only be used to test vertical pile capacity.
- Hollow steel piles will not be used unless required to meet engineering requirements.
- Peak sound pressure levels will be monitored during any driving of steel piles using an impact hammer. If monitored sound pressure levels exceed 180 dB, additional measures will be implemented potentially including an air bubble curtain, dewatering the area using a cofferdam or use of a smaller hammer.

- All temporary piles and old bridge piles will be removed completely, to the extent feasible using a crane or vibratory hammer.
- Groundwater discharged to Los Osos Creek from dewatering activities during the construction period will be allowed to settle in a temporary tank (or equivalent) prior to discharge and provided with erosion protection at the pipe outlet.
- Drilling for the CIDH piles will utilize a temporary steel casing installed to the full depth of the drill-hole, or at least three feet below the ground surface. Drilling will be monitored to detect any discharge of drilling fluid from the casing, streambed or adjacent areas.
- Containment (i.e., washed gravel-filled bags wrapped in plastic sheeting) will be used at the drillhole to collect and contain any drilling fluid leakage and prevent any discharges to the streambed.
- Absorbent material and disposal bags will be maintained onsite to cleanup any drilling fluid spillage. All spillage of drilling fluids (including residual solids) will be removed from the streambed and adjacent areas using cleanup materials.

1.3.3. Proposed Construction Activities

The new bridge will be constructed immediately upstream of the existing bridge during the first construction season, and the existing bridge will be demolished during the second construction season. The new bridge foundations will consist of cast-in-drilled-hole (CIDH) piles placed outside of the high tide line (HTL). Drilling slurry will be contained and disposed offsite. The CIDH piles for the bridge bent will be constructed within a dewatered cofferdam and will consist of two 6 by 6 foot concrete support columns placed above the HTL. The cofferdam will be placed to prevent encroachment of higher than average tides, configured partly below the HTL. No rock slope protection is proposed. The new bridge will be 13 feet wider than the existing bridge, resulting in an additional 1,300 ft^2 of shading (3,700 ft^2 shading currently).

The existing bridge will be demolished following construction of the new bridge. Steel nets and tarps, or equivalent, will be used to prevent debris from falling into the creek. The existing 2 bents of 9 piles each (18 total; 23 ft^2) will be removed or cut at least 3 feet below the mudline. Abandoned roadway approaches will be removed and used for stormwater features and habitat mitigation. The pavement will be cut and removed. Habitat restoration activities may include final grading, establishing suitable substrate conditions, installing container stock and seeding with native species, and maintaining erosion controls until all areas are stabilized with vegetation.

Permanent stormwater features will be placed at the top of the creek banks, above the HLT. Stormwater swales will be installed with RSP at the ends of storm drains located on the endpoints to act as an energy dissipater. Some locations will have basins to catch sediment located at the down gradient of the swales. These features are intended to treat and infiltrate stormwater runoff to minimize direct discharge to the creek and ensure that any direct discharge that occurs has been filtered which will be an improvement over existing conditions. The final stormwater design will include mechanisms to remove pollutants in runoff for each basin, including bioretention facilities or self-treating areas to remove pollutants through filtration.

Some work may occur in upland areas outside of the dry season work window (June 1 – October 31) and sedimentation and erosion control measures will be maintained to prevent adverse effects to the creek.

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

- Sedimentation and erosion controls will be used in all disturbance areas for duration of construction until all disturbed areas are restored and stabilized (i.e., bonded fiber matrix, temporary fiber rolls, designated vehicle wash areas).
- A storm water pollution prevention plan (SWPPP) and spill prevention control and countermeasure plan (SPCCP) will be developed.
- Erosion control and stabilization measures will be incorporated into road construction plans.
- Bridge abutments will be designed to minimize disturbances to EFH and stream banks.
- Side-casting of road materials into Los Osos Creek will be prohibited.
- Native vegetation will be used to revegetate and stabilize affected stream banks.
- Standard dust control measures will be implemented.
- In-water structures will be composed of clean materials and will be limited to the minimum necessary footprint to support construction activities.
- Construction schedule will be managed to achieve removal of instream structures at the end of the dry season.
- Temporary construction impact areas will be restored to preexisting conditions.

1.3.4. Proposed Post-Construction Activities

Following construction each season, cofferdams and temporary trestles will be removed. Piles will be removed with a crane or vibratory hammer or cut below the mudline if removal is not possible. At the end of the second season, all disturbed areas will be hydro-seeded and replanted with native vegetation; sedimentation and erosion control measures will remain in place until restored areas are stable. Habitat mitigation areas will be monitored for five years post-construction. Backfill will be placed behind bridge barriers.

Under the MSA, "Federal action" means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal agency (see 50 CFR 600.910). Caltrans does not propose any additional measure to those described in the above proposed action for Pacific Coast Groundfish of Coastal Pelagic Species EFH.

"Interrelated actions" are those that are part of a larger action and depend on the larger action for their justification. "Interdependent actions" are those that have no independent utility apart from the action under consideration (50 CFR 402.02). The incorporation of a future Coastal Trail along South Bay Boulevard into the proposed pedestrian path is interdependent on the proposed pedestrian path being built. Coastal Trail segments to connect to the bridge would be located adjacent to South Bay Boulevard travel lanes up to the bridge foundations. This would increase hard surfaces adjacent to the creek which may facilitate the runoff of contaminants and pollutants to the creek, potentially affecting water quality of critical habitat for steelhead. Plans for the trail have not yet been developed and it is unknown if stormwater or filtration features will be included in the design. Because of the stormwater features included in the proposed action and

orientation of the future trail to the creek, any additional effects due to runoff are expected to be insignificant.

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 to 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 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 for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features" (81 FR 7214, February 11, 2016).

The designation of critical habitat for S-CCC steelhead uses the term primary constituent element (PCE) or essential features. The 2016 final rule (81 FR 7414; February 11, 2016) that revised the critical habitat regulations (50 CFR part 424) 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.

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 critical 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 is likely to 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" for the jeopardy analysis. 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 S-CCC 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 S-CCC DPS of steelhead as threatened on August 18, 1997 (62 FR 43937) and a revised listing on January 5, 2006 (71 FR 834). The status of the S-CCC 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 S-CCC 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 S-CCC 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 S-CCC DPS and expressed particular concern for the DPS's connectivity and spatial structure. NMFS' latest 5-year status review for the S-CCC 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 S-CCC 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_2 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 S-CCC 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 S-CCC 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 S-CCC 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 S-CCC 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 S-CCC 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 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 proposed action will take place in Los Osos Creek, which is designated critical habitat for threatened S-CCC steelhead. The South Bay Boulevard bridge is located just upstream of Morro Bay at 35.33509° N, 120.82332° W. The creek is approximately 700 feet wide at the bridge and the action area includes approximately 1,350 linear feet of Los Osos Creek; 1,050 feet downstream of the

existing bridge and 300 feet upstream. The proposed action will take place during low flows; therefore, any flows present at the time are expected to be due to tidal influences.

2.4. Environmental Baseline

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

Critical habitat within the action area of Los Osos Creek provides migration and rearing habitat for steelhead. Los Osos Creek is approximately 10 miles long, with the South Bay Boulevard Bridge located 2,000 feet upstream of where the creek meets Morro Bay. Upper portions of the creek dry during the summer, though tidal influences provide water year-round in the lower portion. Adjacent land use is quite versatile, including ranching, residential, industrial, and conservation areas. Several steelhead were observed in Los Osos Creek in 2001 and 2003 consisting of multiple age classes, though counts are not available (Becker and Reining 2008). The other creek that empties into Morro Bay, Chorro Creek, has been estimated in the 1970s to support steelhead runs of 150 adults, though there is a dam impairing flow (Becker and Reining 2008). Taking this into consideration as well as juvenile steelhead observations in other streams in San Luis Obispo County, NMFS expects up to 50 juvenile steelhead may be present during the proposed June 1 – October 31 work window. Adult steelhead are not expected to be present during the time on construction activities.

2.5. Effects of the Action

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

2.5.1. Effects of the Action on Critical Habitat

2.5.1.1 Temporarily Altering Aquatic Habitat

Installing coffer dams and dewatering the work area is expected to temporarily prevent a portion of Los Osos Creek from serving as a freshwater migration corridor and freshwater rearing site for threatened steelhead during approximately 5 months during the dry season (June 1 through October 31). The temporary loss of habitat is expected to have at least a few effects, 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 dewatering 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 coffer dams and dewatering is relatively small compared to the amount and extent of habitat available elsewhere in Los Osos Creek and, perhaps more importantly, the coffer dams will be removed following completion of the proposed action and the creek banks 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 dewatering 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 coffer dams in Los Osos Creek are not expected to result in any change to channel morphology. The creekbed will be temporarily disturbed by the presence of the temporary platforms, though these will be removed following each construction season as well. In addition, 23 ft^2 of creek habitat will be restored with the removal of the existing bridge piers. 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 Los Osos Creek because substantive increases in sedimentation and turbidity levels resulting from construction activities are expected to be minimal and temporary if they occur, 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.

2.5.2. Effects of the Action on Threatened Steelhead

The expected effects of the action on threatened steelhead are related to the proposed isolation of a portion of Los Osos Creek. 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 Effects of Habitat Isolation on 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. Movement between the upstream and downstream portions of the action area will be possible during instream construction. Overall, we anticipate the presence of the coffer dams would affect only a small number of steelhead for a few months during the dry season each year. The effect of macroinvertebrate loss on juvenile steelhead is expected to be negligible because food from upstream sources would be available downstream of the action area via drift. The 1,300 ft^2 increase in shading over Los Osos Creek due to the wider bridge and 2,450 ft^2 due to each temporary trestle 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 trestles 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 for each trestle (June 1 to October 31).

Capture and Relocation.—Although isolating a portion of Los Osos Creek 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 dewatering, biologists will capture and relocate steelhead to the nearest suitable habitat upstream or downstream of the cofferdams. Caltrans proposes that biologists will be experienced with steelhead handling, and will continuously monitor the placement of the cofferdams to capture and relocate stranded steelhead.

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 Los Osos Creek, NMFS expects no more than 50 juvenile steelhead will be within the action area with up to 30 steelhead needing to be relocated each construction season (60 steelhead over two seasons) due to the small area occupied by the coffer dams relative to the

width of the creek. NMFS expects that 3 juvenile steelhead may be injured or killed as a result of the proposed action each construction season (6 individuals over two seasons). 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 south-central 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 S-CCC DPS of threatened steelhead. Therefore, the effects of the relocation on steelhead are not expected to give rise to population-level effects.

2.5.2.2 Effects of Pile Driving on Juvenile Steelhead

Available information indicates that fish may be injured or killed when exposed to elevated levels of underwater sound pressure generated from driving steel piles with impact hammers (Hastings and Popper 2005). Injuries to fish include hemorrhaging and the rupture of internal organs, including the swim bladder and kidney. Death can be instantaneous, occur within minutes after exposure, or occur several days later. Other sustained injuries may not lead to death but could result in reduced fitness, ability to forage, increase predation risk, impact sensory functions, and disrupt migration and behavior patterns. Therefore, the potential impact of pile driving on steelhead at Los Osos Creek is of concern.

The Fisheries Hydroacoustic Working Group (FHWG[1]), uses a duel metric threshold criterion to correlate physical injury to fish exposed to underwater producing pile driving with impact hammers. Specifically, this includes single strike peak sound pressure level (SPL) of 206 decibels (dB) and a cumulative sound exposure level (SEL) of 187 dB for fish two grams or greater, or 183 dB for fish less than 2 grams. If either threshold is exceeded, then physical injury is assumed to occur. The piles for the temporary trestles will be installed within the wetted channel without any fish exclusion measures in place. The SEL threshold of 187 dB is expected to be exceeded within 23 feet of each pile being tested. The installation of the piles prior to testing is expected to create enough disturbance that any steelhead in the area will move to another location further from the location of the temporary platform being installed. Based on steelhead survey results and anecdotal observations of juvenile steelhead in the vicinity of the action area in Los Osos Creek, NMFS expects no more than 50 juvenile steelhead will be within the action area. These individuals are expected to be startled into relocating or will otherwise be exposed to potentially harmful or deadly sound pressure levels. However, Caltrans proposes to monitor sound levels during pile testing, though does not specify the distance from the piles which sound will be monitored. If sound levels exceed the injury threshold, Caltrans proposes to implement sound attenuation methods, such as bubble curtains.

2.5.2.3 Effects of Water Quality Alterations on Steelhead

Proposed activities include stream crossings, access road alteration, and a future bike path. These activities may expose steelhead to the degradation product of tires (6PPD-quinone) via storm water runoff, which has been identified as the causal factor in coho salmon (*O. kisutch*)

[1] Member agencies of the FHWG include Caltrans, Federal Highways Administration, NMFS, U. S. Fish and Wildlife Service, Oregon and Washington Departments of Transportation.

mortality at concentrations of less than a part per billion (Tian et al. 2021; Tian et al. 2022) and to juvenile steelhead trout at concentrations of one part per billion (Brinkmann et al. 2022) Coho adults are noted to perish "within hours" of exposure (Scholz et al. 2011) and juvenile coho perished or were completely immobile within seven hours of exposure (Chow et al. 2019). Coho juveniles did not recover even when transferred to clean water (Chow et al. 2019). Steelhead mortality can begin as soon as seven hours post exposure (Brinkmann et al. 2022). Effects appear to be related to cardiorespiratory disruption, consistent with symptoms (surface swimming and gaping followed by loss of equilibrium (Scholz et al. 2011)) and, therefore, sublethal effects such as disruption of behaviors needed for survival (e.g. predator avoidance) and swimming performance are expected. Additional research concerning sublethal effects is needed. Mortality can be prevented by infiltrating the road runoff through soil media containing organic matter which results in removal of this (and other) contaminant(s) (McIntyre et al. 2015; Spromberg et al. 2016; Fardel et al. 2020).

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]. 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 earlier in the discussion of environmental baseline (Section 2.4).

NMFS is generally familiar with the activities in the action area and the extension of the California Coastal Trail is the only action that is reasonably certain to occur. Potential effects due to the trail are the same as those described in Section 2.5.1.3. 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 assessing the risk that the proposed action poses to species and critical habitat. 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 Los Osos Creek action area during the time the proposed action will be implemented and, therefore, subject to effects of the proposed action.

The main risks to individual steelhead involves effects due to capture and relocation and to sound pressure levels. The adverse effects include potential injury or mortality during the process of capture, relocation, and pile driving, but precautions are in place to partly minimize 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 the temporary trestles 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 30 juvenile steelhead that may be captured and relocated during each construction season (60 individuals over two seasons) as a result of isolating the action area, with a potential lethal take of no more than 3 out of the 30 each construction season (6 over two seasons), thus the risk of mortality is low. Any juvenile steelhead present in the action area likely make up a small proportion of the S-CCC 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. Vegetation trimming is not expected to appreciably decrease the function of the riparian zone. The impacts from disturbing the streambed in Los Osos Creek are not expected to adversely affect the quality or quantity of aquatic habitat; rather, the proposed action is expected to slightly improve conditions by removing 23 ft^2 of structure from the creek. Maintained passage conditions are expected to favor the viability of the threatened S-CCC 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, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of threatened S-CCC steelhead 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). "Harass" is further defined by interim guidance as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly

disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "Incidental take" is defined 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: Some steelhead within the action area of Los Osos Creek, expected to be no more than 30 juveniles that are captured or harassed during relocation activities each construction season (60 over two seasons). No more than 3 juvenile steelhead are expected to be injured or killed as a result of relocation the species each construction season (total of 6 juvenile steelhead). Also, all steelhead within the action area, expected to be no more than 50 steelhead that are harassed due to sound pressure created by pile driving. This take will be evaluated via hydroacoustic monitoring where the cumulative SEL does not exceed 187 dB at a distance greater than 23 feet from the pile being proofed. 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 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 proposed activities.

2. Prepare and submit a post-construction repost regarding the effects of fish relocation and construction activities.

2.9.4. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. Caltrans or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

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

a. Caltrans shall contact NMFS (Jess Fischer, 562-533-6813 or 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. The information Caltrans provides at that time 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. 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.
b. Caltrans shall conduct hydroacoustic monitoring during pile driving and proofing activities within 25 feet of the pile being installed. The distance is outside of the 23-foot radius where sound levels are expected to harm steelhead, but close enough that a cumulative SEL of 187 dB or greater outside of the expected radius would be readily detected.

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 each construction season. The report shall be sent to Jess Fischer, jessica.fischer@noaa.gov. 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.

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 Caltrans' South Bay Boulevard Bridge Replacement Project at Los Osos Creek.

As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect on the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

3. MAGNUSON–STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the physical, biological, and chemical properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [CFR 600.905(b)].

This analysis is based, in part, on the EFH assessment provided by Caltrans and descriptions of EFH for Pacific Coast groundfish (PFMC (Pacific Fishery Management Council) 2005) and Coastal Pelagic Species (CPS) (PFMC 1998) contained in the fishery management plans developed by the PFMC and approved by the Secretary of Commerce.

3.1. Essential Fish Habitat Affected by the Project

Pacific Coast Groundfish EFH and CPS EFH may be adversely affected by the proposed action. Specific habitats identified in the PFMC (2005) for groundfish include the upper extent of

saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 ppt during the period of average annual low flow. Specific habitat identified in the PFMC (1998) for CPS includes estuarine waters where surface temperatures range between 10° C to 26° C. These habitats include all waters and associated biological communities falling within the action area described above in the accompanying biological opinion for the project located within the Morro Bay estuary.

3.2. Adverse Effects on Essential Fish Habitat

NMFS determined the proposed actions would adversely affect EFH designated under the Pacific Coast Groundfish and CPS FMPs due to localized increases in turbidity, disturbance of benthic habitat, and expanded area of overwater structure. As discussed above, adverse effects from turbidity and disturbance of the benthic community are expected be temporary and localized. Therefore, NMFS has no practical EFH conservation recommendation to provide to avoid or reduce the magnitude of the anticipated effects.

3.3. Supplemental Consultation

Caltrans must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations [50 CFR 600.920(l)].

4. 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.

4.1. 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 County 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 2 weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adhere to conventional standards for style.

4.2. 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.

4.3. 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 part 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 and EFH consultation contain more background on information sources and quality.

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

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

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