**UNITED STATES DEPARTMENT OF COMMERCE**
National Oceanic and Atmospheric Administration
**NATIONAL MARINE FISHERIES SERVICE**
West Coast Region
650 Capitol Mall, Suite 5-100
Sacramento, California 95814-4700

AUG 15 2017

**Refer to NMFS No:** *WCR-2017-7467*

Mr. Javier Almaguer
Biology Branch Chief – Central Region
California Department of Transportation
District 6
855 M Street, Suite 200
Fresno, CA 93721-2716

Re: Endangered Species Act Section 7(a)(2) Biological and Conference Opinion, Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response, and Fish and Wildlife Coordination Act Recommendations for the San Joaquin River Bridge Scour and Seismic Retrofit Project (EA 06-0N990) in Fresno/Madera County, California

Dear Mr. Almaguer:

Thank you for your letter of July 21, 2017, 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 California Department of Transportation's (Caltrans) San Joaquin River Bridge Scour and Seismic Retrofit Project in Fresno/Madera County, California.

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

The enclosed biological and conference opinion (opinion) is based on our review of the proposed project, as detailed in the biological assessment (BA) prepared by Caltrans, and its effects on the federally listed threatened California Central Valley (CCV) steelhead (*Oncorhynchus mykiss*), as well as the Central Valley (CV) spring-run Chinook salmon (*O. tshawytscha*) population being reintroduced by the San Joaquin River Restoration Program in accordance with section 7 of the ESA. This population of CV spring-run Chinook salmon has been designated by NMFS as a non-essential experimental population in accordance with section 10(j) of the ESA (78 FR 79622), and therefore is included in this opinion for conferencing purposes only. No proposed or designated critical habitat occurs within the action area for either species. Based on the best available scientific and commercial information, NMFS concludes that the project is not likely to jeopardize the continued existence of these federally listed species. NMFS has also included an incidental take statement with reasonable and prudent measures and non-discretionary terms and

conditions that are necessary and appropriate to avoid, minimize, or monitor incidental take of CCV steelhead associated with the project. These measures are also expected to minimize impacts to CV spring-run Chinook salmon.

NMFS recognizes that Caltrans has assumed the Federal Highway Administration's (FHWA) responsibilities under Federal environmental laws for this project as allowed by a Memorandum of Understanding (NEPA Assignment) with the FHWA effective December 23, 2016. As such, Caltrans serves as the lead Federal Action Agency for the proposed project.

This letter also transmits NMFS's review of potential effects of the proposed project on EFH for Pacific Coast Salmon, designated under the MSA. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. The document concludes that the project will adversely affect the EFH of Pacific Coast Salmon in the action area and has included recommendations.

Because the proposed action will modify a stream or other body of water, NMFS also provides recommendations and comments for the purpose of conserving fish and wildlife resources under the Fish and Wildlife Coordination Act (16 U.S.C. 662(a)).

Please contact Neal McIntosh in NMFS' California Central Valley office at (916) 930-3721 or via email at neal.mcintosh@noaa.gov if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,

Barry A. Thom
Regional Administrator

Enclosure: Biological Opinion

cc: California Central Valley Office
Division Chron File: ARN 151422-WCR2016-SA00341

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**Endangered Species Act (ESA) Section 7(a)(2) Biological and Conference Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response, and Fish and Wildlife Coordination Act Recommendations.**

San Joaquin River Bridge Scour and Seismic Retrofit Project (EA 06-0N990)
in Fresno/Madera County, California

NMFS Consultation Number: **WCR-2017-7467**

Action Agency: **California Department of Transportation (Caltrans)**

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? |
|---|---|---|---|---|---|
| California Central Valley steelhead (*Oncorhynchus mykiss*) distinct population segment | Threatened | Yes | No | NA | NA |
| Central Valley Spring-run Chinook salmon (*Oncorhynchus tshawytscha*) evolutionarily significant unit | Threatened (non-essential experimental population) | Yes | No | NA | NA |

| Fishery Management Plan That Describes EFH in the Project Area | Does Action Have an Adverse Effect on EFH? | Are EFH Conservation Recommendations Provided? |
|---|---|---|
| Pacific Coast Salmon | Yes | Yes |

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

**Issued By:** Maria C Rea
for Barry A. Thom
Regional Administrator

**Date:** AUG 15 2017

**List of Acronyms and Abbreviations**

BA – biological assessment
BMPs – best management practices
Caltrans – California Department of Transportation
CCV – California Central Valley
CCVO – California Central Valley Office
CFR – Code of Federal Regulations
CIDH – cast in drilled hole
CV – Central Valley
Delta – Sacramento-San Joaquin Delta
DPS – distinct population segment
DQA – Data Quality Act
EFH – essential fish habitat
ESA – Endangered Species Act
ESU – evolutionarily significant unit
FMP – Fisheries Management Plan
FR – Federal Register
FWCA – Fish and Wildlife Coordination Act
HAPCs – habitat areas of particular concern
IPCC – intergovernmental panel on climate change
ITS – incidental take statement
kg – kilogram
MP – mile post
MSA – Magnuson-Stevens Fishery Conservation and Management Act
NMFS – National Marine Fisheries Service
NTU – nephelometric turbidity unit
opinion – biological and conference opinion
PBF – physical or biological feature
PCE – primary constituent element
PFMC – Pacific Fishery Management Council
PVA – population viability analysis
Reclamation – United States Bureau of Reclamation
RM – river mile
RPMs – reasonable and prudent measures
SJRRP - San Joaquin River Restoration Program
SWPPP – storm water pollution prevention plan
USC – United States Code
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Survey
VSP – viable salmonid population
WCR – West Coast Region

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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

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

We 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 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 through NMFS' Public Consultation Tracking System https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts. A complete record of this consultation is on file at NMFS' West Coast Region (WCR) California Central Valley Office (CCVO).

## 1.2 Consultation History

- On November 10, 2016, Caltrans created a species list using the NMFS Species List Program.

- On May 2, 2017, NMFS' WCR CCVO received an informal consultation initiation request letter and application package for the San Joaquin River Bridge Scour and Seismic Retrofit Project from Caltrans.

- On July 13, 2017, NMFS issued a letter of non-concurrence for the informal consultation request.

- On July 21, 2017, NMFS CCVO received a request for formal consultation with an updated biological assessment (BA) for the proposed project.

- On July 25, 2017, NMFS received additional information about the seismic retrofit portion of this project.

- On July 28, 2017, NMFS received additional information about the water diversion, dewatering, and fish rescue portions of this project.

- On August 1, 2017, NMFS received further clarification on the water diversion and the work window for this project.

- NMFS initiated formal consultation on August 1, 2017.

### 1.3 Proposed Federal Action

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

Under the MSA Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

Under the FWCA, an action occurs whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license" (16 USC 662(a)).

"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). No interrelated actions or interdependent actions were identified.

In this proposed action, Caltrans proposes to perform a scour, seismic, and rail retrofit at the San Joaquin River and San Joaquin River Overflow Bridges on Old State Route 41. The San Joaquin River Bridge has experienced scouring at seven of its piers, and the bridge does not meet current seismic standards. Both bridges currently have deficient rails. Work will be conducted over two construction seasons. The in-water work window for this project will be from August 15 to November 15 during season one and June 15 to October 15 during season two.

The project will add two 48-inch cast-in-drilled-hole (CIDH) piles per footing at piers five through eleven. The two piles will be placed to the east and west of the existing structure. The new piles will let the channel erode naturally with time at the existing footings. The new 48-inch CIDH piles will hold the load and provide stability to the existing, eroded footings and the bridge as a whole.

To access the piers for the scour retrofit, the embankment to the northwest and southwest of the San Joaquin River Bridge will be cut and graded. Riparian vegetation will be removed in order to gain access to the bridge piers. In order to maintain structural integrity of the bridge, work on the piers will occur in two stages; stage one will include work at piers 6, 8, and 10, and stage two will include work at piers 5, 7, 9, and 11. At all the piers work will include excavating to the bottom of the grade beam, drilling a hole to set the CIDH pile rebar, placing the rebar in the hole, pouring the CIDH pile, drilling and bonding dowels into existing footing and pier walls, placing rebar cage that will lock CIDH pile and existing footing and pier walls together, pouring grade

beam concrete, and backfilling as required. In order to reduce the amount of time needed for in-water work during the first construction season, stage one and stage two may occur in the reverse order, i.e. stage two may occur in construction season one and stage one may occur in construction season two.

Access to piers 8, 9, and 10 will require a water diversion. Depending on flows within the river, the water diversion will be accomplished with either 8,000 pound K-rail barriers with sandbags and plastic sheeting and/or steel sheet piles. Steel sheet piles ten feet in length will be driven with a vibratory hammer on a 330 excavator from land. In stage one, water will be diverted away from piles 8 and 10. If K-rail barriers are used for stage one, the barrier near pier 8 will be 150 feet long and the K-rail barrier near pier 10 will be 130 feet long. Approximately 3,000 square feet of plastic sheeting will go over the K-rails near pier 8 and 2,600 square feet of plastic sheeting will be used near pier 10. Approximately 140 and 120 cubic yards of sandbags will be used to reinforce the berm nears pier 8 and 10, respectively. If steel sheet piles are used, the water diversion for stage one will likely require 215 sheet piles to create 9,500 square feet of temporary work space. Approximately 50 sheet piles will be installed per day over a five day period during the in-water work window for stage one. The water diversion for stage two will divert water away from pier 9. If K-rail barriers are used for stage two, the barrier near pier 9 will be 195 feet long. Approximately 3,900 square feet of plastic sheeting and 180 cubic yards of sandbags will be used. If steel sheet piles are used, the diversion for stage two will likely require 150 sheet piles to create 7,900 square feet of temporary work space. The sheet piles and installation process will remain the same over the construction seasons. Approximately 50 sheet piles will be installed per day over a five day period during the stage two in-water construction season. At the conclusion of each construction season the K-rails and sheeting will be removed and/or the sheet piles will either be completely removed or cut off at the mud line.

The water diversions for piers 8, 9, and 10 may require dewatering of the area behind the sheet piles or K-rails. If so, fish capture/relocation will be performed by a qualified fish biologist prior to dewatering the area. Following installation of the water diversion, a qualified fisheries biologist will conduct a snorkel survey to check area for isolated fish, which may consist of listed and non-listed species. As many fish as possible will be removed using a combination of seining, baited minnow traps, dip net, electrofishing, and/or hand removal. Fish will be handled with extreme care to minimize stress. Fish will be kept in cool, shaded, aerated water. Fish will be protected from excessive noise, excessive handling, temperature variation, jostling, or overcrowding while they are in captivity during relocation. Fish will only be removed when ready for to be released. Any juvenile salmonids encountered will be separated from older salmonids and other potential aquatic predators. Fish will be relocated as quickly as possible at least 1,000 feet downstream of the project area to a location with suitable habitat conditions. The area behind the water diversion will then be dewatered gradually using pumps with screens that comply with the Juvenile Fish Screen Criteria for Pump Intakes (NMFS 1996). A record will be maintained of all fish captured/relocated, which will minimally include the date and method of capture and relocation, location of release relative to project site, total number of fish captured and relocated by type and life stage, and any mortalities of salmonids.

For the seismic retrofit portion of the proposed project, the hinges between bridge segments on the San Joaquin River Bridge will be modified to be more robust to seismic events. Expansion hinges with four pipe seat extenders will be added to the bridge hinges to provide sufficient length to prevent hinge decoupling from a seismic event. Pipe seat extenders are pipes used to extend the seat hinge, and they are designed to be strong enough to support the superstructure if unseating of the hinge occurs. Pipe seat extenders are attached to one side of the joint and move freely over the other side.

The installation of pipe seat extenders requires access to the interior of the bridge frames. Holes will be cored through the hinge diaphragms to gain access to the interior of the bridge frames. Pipe extenders for this project will be 6 inches in diameter. Pipe extenders are fixed at one end of the hinge and free to slide at the other end. The pipes are run through cored holes in the hinge diaphragms. The fixed end of the pipe is usually on the bearing side of the hinge. A steel bolster is placed on the non-anchored side of the hinge. The pipe typically extends 6 to 12-inches beyond the edge of the bolster face. A plate may be welded to the end of the pipe to limit the ultimate gap expansion.

The proposed project will upgrade the railings on both the San Joaquin River and the San Joaquin River Overflow Bridges to include concrete barrier and tubular bicycle railing.

Approximately 1.07 acres of riparian habitat will be impacted by the project. The riparian habitat to be impacted includes a total of 13 trees with a diameter at breast height (DBH) of greater than four inches: six White Alders, three Fremont Cottonwoods, two Valley Oaks, and two California Sycamores

### 1.3.1 Avoidance and Minimization Measures

Caltrans included the following avoidance and minimization measures for this project:

- The in-water work window for this project will be from August 15 to November 15 during season one and June 15 to October 15 during season two.

- No impact pile driving will occur during the project. All installation of sheet piles will be conducted using a vibratory hammer to reduce the effects of noise on listed fish species.

- If a fish capture/relocation is required it will be carried out by a qualified fisheries biologist.

    - Fish will be handled with extreme care to minimize stress.
    - Fish will be kept in cool, shaded, aerated water.
    - Fish will be protected from excessive noise, excessive handling, temperature variation, jostling, or overcrowding while they are in captivity during relocation.
    - Fish will only be removed from water when ready for release.
    - Juvenile salmonids will be separated from older salmonids and other potential aquatic predators.

- To protect riparian habitat from unplanned impacts, Caltrans will establish environmentally sensitive areas. Environmentally sensitive areas will be fenced off with orange mesh fencing around trees and shrubs to be avoided. Temporary orange mesh fencing will also be used to delineate the limits of the construction footprint.

- Caltrans will compensate for the removal of native riparian vegetation at a minimum replacement ratio of 3:1. An onsite revegetation program will be used to meet this requirement. Caltrans proposes replacement planting for trees that are less than 24 inches DBH and more than 4 inches DBH, at a 4:1 ratio. A monitoring program will be conducted for five years upon completion of which seventy-five percent vegetation survival of the planted area must be achieved.

- A combination of equipment noise control and administrative measures will be employed to minimize effects of construction related noise.

- Caltrans will conduct environmental awareness training for construction employees to brief them on the need to avoid effects to sensitive biological resources. The program will review listed species that may occur in the action area and will include steps to be taken if listed species are found within the construction area.

- A NMFS approved biological monitor will be designated for the project to perform periodic site visits to ensure that fencing around environmentally sensitive areas is intact and that activities are being conducted in accordance with the agreed upon project schedule.

- In order to comply with the requirements of the Clean Water Act, Caltrans will develop a storm water pollution prevention plan (SWPPP) for this project. The SWPPP will specify best management practices (BMPs) which include the following:

    - All in-water work within the San Joaquin River will be conducted between August 15 and November 15 during season one and June 15 and October 15 during season two.

    - Equipment used in and around the San Joaquin River will be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance will be performed outside of the bed, bank, or channel of the San Joaquin River.

    - The SWPPP will include a hazardous spill prevention control and countermeasure plan. The plan will include onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing and staging construction equipment and preventing and responding to spills. The plan will also identify the parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the spill prevention and countermeasure plan.

- The SWPPP for the project will detail the applications and type of measures and the allowable exposure of unprotected soils.

- Discharge from dewatering operations, if needed, and runoff from disturbed areas will be made to conform to the water quality requirements of the waste discharge permit issued by the Regional Water Quality Control Board (RWQCB).

- Temporary erosion control measures, such as sandbagged silt fences, will be applied throughout construction of the proposed project and will be removed after the working area is stabilized or as directed by the engineer. Soil exposure will be minimized through use of temporary BMPs, groundcover, and stabilization measures. Exposed dust producing surfaces will be sprinkled daily, if necessary, until wet; this measure will be controlled to avoid producing runoff. Paved roads will be swept daily following construction activities.

- The contractor will conduct periodic maintenance of erosion and sediment control measures.

- An appropriate seed mix of native species will be planted on disturbed areas upon completion of construction.

- A 401 Water Quality Certification has been obtained from the Central Valley RWQCB that contains additional BMPs and water quality measures to ensure the protection of water quality.

- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. Side slopes will not be steeper than 2:1. All stockpile areas will be surrounded by a filter fabric fence and interceptor dike.

- Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.

- Use other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, sandbag dikes, and temporary re-vegetation or other ground cover) to control erosion from disturbed areas as necessary.

- Avoid earth or organic material from being deposited or placed where it may be directly carried into the channel.

# 2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

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

## 2.1 Analytical Approach

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

We use the following approach to determine whether a proposed action is likely to jeopardize listed species:

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

## 2.2 Rangewide Status of the Species

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' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02.

In 2016, NMFS completed a status review of 28 species of Pacific salmon, steelhead and eulachon, including CCV steelhead, and concluded that the species' status should remain as previously listed (81 FR 33468). The 2016 status reviews for CCV steelhead and CV spring-run Chinook found that, although the listings should remain unchanged, the status of these populations have suffered in 2014 and 2016 from the unprecedented California drought (NMFS 2016a, NMFS 2016b)

The following federally listed species ESU and DPS occur in the action area and may be affected by the proposed action (Table 1). For more information on CCV steelhead visit:

> http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/salmon_and_steelhead_listings/steelhead/california_central_valley/california_central_valley_steelhead.html

For more information on CV spring-run Chinook visit:

> http://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/salmon_and_steelhead_listings/chinook/central_valley_spring_run/central_valley_spring_run_chinook.html

Table 1. ESA Listing History.

| **Species** | **ESU or DPS** | **Original Final FR Listing** | **Current Final Listing Status** | **Critical Habitat Designated** |
|---|---|---|---|---|
| Steelhead (*O. mykiss*) | California Central Valley DPS | 3/19/1998 63 FR 13347 Threatened | 1/5/2006 71 FR 834 Threatened | Not in action area |
| Chinook salmon (*O. tshawytscha*) | Central Valley spring-run DPS (*non-essential experimental population) | 9/16/1999 64 FR 50394 Threatened | 6/28/2005 70 FR 37160 Threatened | not in action area |

*78 FR 79622, December 31, 2013

2.2.1 California Central Valley Steelhead

Detailed information regarding DPS listing history, DPS life history, and VSP parameters can be found in the NMFS 2014 Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon, Central Valley Spring-Run Chinook Salmon, and the Distinct Population Segment of California Central Valley Steelhead (NMFS 2014).

**Summary of CCV Steelhead DPS Viability**

All indications are that natural-origin CCV steelhead have continued to decrease in abundance and in the proportion of naturally spawned fish to hatchery produced fish (Good *et al.* 2005, NMFS 2016a); the long-term abundance trend remains negative. Hatchery production and returns are dominant over natural-origin fish, and one of the four hatcheries is dominated by

Eel/Mad River origin steelhead stock. Continued decline in the ratio between naturally produced juvenile steelhead to hatchery juvenile steelhead in fish monitoring efforts indicates that the wild population abundance is declining. Hatchery releases (100 percent adipose fin-clipped fish since 1998) have remained relatively constant over the past decade, yet the proportion of adipose fin-clipped hatchery smolts to unclipped naturally produced smolts captured in monitoring studies has steadily increased over the past several years (NMFS 2016a).

Although there have been recent restoration efforts in the San Joaquin River tributaries, CCV steelhead populations in the San Joaquin Basin continue to show an overall very low abundance, and fluctuating return rates (NMFS 2016a). Lindley *et al.* (2007) developed viability criteria for Central Valley salmonids. Using data through 2005, Lindley *et al.* (2007) found that data were insufficient to determine the status of any of the naturally-spawning populations of CCV steelhead, except for those spawning in rivers adjacent to hatcheries, which were likely to be at high risk of extinction due to extensive spawning of hatchery-origin fish in natural areas.

The widespread distribution of natural-origin CCV steelhead in the Central Valley provides the spatial structure necessary for the DPS to survive and avoid localized catastrophes. However, most CCV steelhead populations are very small, are not monitored, and may lack the resiliency to persist for protracted periods if subjected to additional stressors, particularly widespread stressors such as climate change (NMFS 2011b). The genetic diversity of CCV steelhead has likely been impacted by low population sizes and high numbers of hatchery fish relative to natural-origin fish. The life-history diversity of the DPS is mostly unknown, as very few studies have been published on traits such as age structure, size at age, or growth rates in CCV steelhead.

The 2011 status review of the CCV steelhead DPS (NMFS 2011b) found that the status of the population appears to have worsened since the 2005 status review (Good *et al.* 2005), when it was considered to be in danger of extinction.

The 2016 status review (NMFS 2016a) concluded that overall, the status of CCV steelhead appears to have changed little since the 2011 status review (NMFS 2011b) when the Technical Recovery Team concluded that the DPS was in danger of extinction. Further, there is still a general lack of data on the status of natural-origin populations.

According to the 2016 status review, (NMFS 2016a), there are some encouraging signs, as several hatcheries in the Central Valley have experienced increased returns of steelhead over the last few years. There has also been a slight increase in the percentage of wild steelhead in salvage at the south Sacramento-San Joaquin Delta (Delta) fish facilities, and the percentage of wild fish in those data remains much higher than at Chipps Island. The new video counts at Ward Dam show that Mill Creek likely supports one of the best wild steelhead populations in the Central Valley, though at much reduced levels from the 1950's and 60's. Restoration efforts in Clear Creek continue to benefit CCV steelhead. However, the catch of unmarked (natural-origin) steelhead at Chipps Island is still less than five percent of the total smolt catch, which indicates that natural production of steelhead throughout the Central Valley remains at very low levels. Despite the positive trend on Clear Creek and encouraging signs from Mill Creek, all other concerns raised in the previous status review remain.

2.2.2 Central Valley Spring-run Chinook Salmon

Although natural-origin CV spring-run Chinook salmon are not currently known to occur in the action area within the San Joaquin River, there is an ongoing reintroduction effort; therefore, this population is considered here. A final rule was published to designate a nonessential experimental population of CV spring-run Chinook salmon to allow reintroduction of the species between Friant Dam and the confluence with the Merced River on the San Joaquin River as part of the San Joaquin River Restoration Program (SJRRP) (78 FR 79622; December 31, 2013). Pursuant to ESA section 10(j), for the purpose of this conference opinion, the experimental population shall be treated as a candidate species. However, the rule includes proposed protective regulations under ESA section 4(d) that would provide specific exceptions to prohibitions under ESA section 9 for taking CV spring-run Chinook salmon within the experimental population area, and in specific instances elsewhere.

**Summary of CV Spring-run Chinook Salmon DPS Viability**

Since the independent populations in Butte, Deer and Mill creeks are the best trend indicators for ESU viability, NMFS can evaluate risk of extinction based on viable salmonid population (VSP) parameters in these watersheds. Lindley *et al.* (2007) indicated that the spring-run Chinook salmon populations in the Central Valley had a low risk of extinction in Butte and Deer creeks, according to their population viability analysis (PVA) model and other population viability criteria (*i.e.*, population size, population decline, catastrophic events, and hatchery influence, which correlate with VSP parameters abundance, productivity, spatial structure, and diversity). The Mill Creek population of spring-run Chinook salmon was at moderate extinction risk according to the PVA model, but appeared to satisfy the other viability criteria for low-risk status. However, the CV spring-run Chinook salmon ESU failed to meet the "representation and redundancy rule" since there are only demonstrably viable populations in one diversity group (northern Sierra Nevada) out of the three diversity groups that historically contained them, or out of the four diversity groups as described in the NMFS Central Valley Salmon and Steelhead Recovery Plan. Over the long term, these three remaining populations are considered to be vulnerable to catastrophic events, such as volcanic eruptions from Mount Lassen or large forest fires due to the close proximity of their headwaters to each other. Drought is also considered to pose a significant threat to the viability of the spring-run Chinook salmon populations in these three watersheds due to their close proximity to each other. One large event could eliminate all three populations.

In the 2011 status review of the CV spring-run Chinook salmon ESU (NMFS 2011a), the authors concluded that the ESU status had likely deteriorated on balance since the 2005 status review and the Lindley *et al.* (2007) assessment, with two of the three extant independent populations (Deer and Mill Creeks) of spring-run Chinook salmon slipping from low or moderate extinction risk to high extinction risk. Additionally, Butte Creek remained at low risk, although it was on the verge of moving towards high risk, due to the rate of population decline. In contrast, spring-run Chinook salmon in Battle and Clear creeks had increased in abundance since 1998, reaching levels of abundance that place these populations at moderate extinction risk. Both of these populations have likely increased at least in part due to extensive habitat restoration. The

Southwest Fisheries Science Center concluded in their viability report (Williams *et al.* 2011) that the status of CV spring-run Chinook salmon ESU has probably deteriorated since the 2005 status review and that its extinction risk has increased. The degradation in status of the three formerly low- or moderate-risk independent populations is cause for concern.

In the 2016 status review, the NMFS found, with a few exceptions, CV spring-run Chinook salmon populations have increased through 2014 returns since the last status review (NMFS 2011a), which has moved the Mill and Deer creek populations from the high extinction risk category, to moderate, and Butte Creek has remained in the low risk of extinction category. Additionally, the Battle Creek and Clear Creek populations have continued to show stable or increasing numbers the last five years, putting them at moderate risk of extinction based on abundance. Overall, the NMFS' Southwest Fisheries Science Center concluded in their viability report that the status of CV spring-run Chinook salmon (through 2014) has probably improved since the 2011 status review (NMFS 2011a) and that the ESU's extinction risk may have decreased, however the ESU is still facing significant extinction risk, and that risk is likely to increase over at least the next few years as the full effects of the recent drought are realized (Williams *et al.* 2016).

The 2015 adult CV spring-run Chinook salmon returns were very low, and those that did return experienced high pre-spawn mortality. Juvenile survival during the 2012 to 2015 drought has likely been impacted, which will be fully realized over the next several years (NMFS 2016b).

2.2.3 Global Climate Change

One factor affecting the range-wide status of CCV steelhead, CV spring-run Chinook, and aquatic habitat at large is climate change.

The world is about 1.3°F warmer today than a century ago and the latest computer models predict that, without drastic cutbacks in emissions of carbon dioxide and other gases released by the burning of fossil fuels, the average global surface temperature may rise by two or more degrees in the 21st century (Intergovernmental Panel on Climate Change (IPCC) 2007). Much of that increase likely will occur in the oceans, and evidence suggests that the most dramatic changes in ocean temperature are now occurring in the Pacific (Noakes *et al.* 1998). Using objectively analyzed data Liu and Huang (2000) estimated a warming of about 0.9°F per century in the Northern Pacific Ocean.

Sea levels are expected to rise by 0.5 to 1.0 meters in the northeastern Pacific coasts in the next century, mainly due to warmer ocean temperatures, which lead to thermal expansion much the same way that hot air expands. This will cause increased sedimentation, erosion, coastal flooding, and permanent inundation of low-lying natural ecosystems (*e.g.*, salt marsh, riverine, mud flats) affecting listed salmonid PBFs. Increased winter precipitation, decreased snow pack, permafrost degradation, and glacier retreat due to warmer temperatures will cause landslides in unstable mountainous regions and destroy fish and wildlife habitat, including salmon-spawning streams. Glacier reduction could affect the flow and temperature of rivers and streams that depend on glacier water, with negative impacts on fish populations and the habitat that supports them.

Summer droughts along the South Coast and in the interior of the northwest Pacific coastlines will mean decreased stream flow in those areas, decreasing salmonid survival and reducing water supplies in the dry summer season when irrigation and domestic water use are greatest. Global warming may also change the chemical composition of the water that fish inhabit: the amount of oxygen in the water may decline, while pollution, acidity, and salinity levels may increase. This will allow for more invasive species to overtake native fish species and impact predator-prey relationships (Petersen and Kitchell 2001, Stachowicz *et al.* 2002).

In light of the predicted impacts of global warming, the California Central Valley has been modeled to have an increase of between 2 and 7 degrees Celsius by 2100, with a drier hydrology predominated by rainfall rather than snowfall (Dettinger 2004, Hayhoe *et al.* 2004, VanRheenen 2004, Stewart *et al.* 2005). This will alter river runoff patterns and transform the tributaries that feed the Central Valley from a spring and summer snowmelt dominated system to a winter rain dominated system. It can be hypothesized that summer temperatures and flow levels will become unsuitable for salmonid survival. The cold snowmelt that furnishes the late spring and early summer runoff will be replaced by warmer precipitation runoff. This will truncate the period of time that suitable cold-water conditions exist downstream of existing reservoirs and dams due to the warmer inflow temperatures to the reservoir from rain runoff. Without the necessary cold water pool developed from melting snow pack filling reservoirs in the spring and early summer, late summer and fall temperatures in rivers downstream of reservoirs, such as Lake Shasta, could potentially rise above thermal tolerances for juvenile and adult salmonids that must hold and/or rear in the river downstream of the dams over the summer and fall periods.

## 2.3 Action Area

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

The action area for this project is along the San Joaquin River at the crossing of Old State Route 41 in Fresno and Madera Counties, California. The bridge is directly to the east of the two current State Route 41 bridges over the San Joaquin River. The proposed project's action area is within the Lanes Bridge United States Geological Survey (USGS) 7.5 minute quadrangle. The center of the San Joaquin River Bridge is located at 36.87624° N, -119.79206° W. The proposed project's action area includes the project footprint at the bridge site, and includes 600 linear feet upstream and downstream of the bridge, for a total of 1,200 linear feet (365.8 meters, 0.23 miles) of the San Joaquin River. The action area includes the portion of the river where listed fish are determined to likely experience potential adverse effects resulting from the project including in-water construction, sedimentation, turbidity, dewatering, fish capture/relocation, and hydroacoustic impacts.

The action area is within the area of the SJRRP. The action area is within Reach 1A of the San Joaquin River. Reaches are numbered sequentially downstream from the Friant Dam which is approximately 11.8 miles upstream of the action area.

## 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).

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

#### *2.4.1.1 Status of California Central Valley Steelhead in the Action Area*

Historic abundance of CCV steelhead in the action area is difficult to determine, but CCV steelhead were widely distributed, with abundance estimates of 1 to 2 million adults annually, throughout the Central Valley system as a whole (McEwan 2001). There is currently a very low potential for CCV steelhead to pass downstream barriers and arrive naturally in the action area. CCV steelhead cannot access the action area during most flows because there is no fish passage over Sack or Mendota Dams, although passage is possible during very high flow events. Should CCV steelhead swim over Sack Dam during higher flow events, they may not be able to ascend Mendota Dam. CCV steelhead could potentially access the San Joaquin River upstream of Mendota Dam when the flash boards are removed during very high flow events. If adult CCV steelhead were to successfully migrate they could potentially spawn in Reach 1 which includes the proposed project's action area. If CCV steelhead do successfully spawn in Reach 1, then juveniles could rear in the action area. Kelts could also emigrate through the action area from higher up in Reach 1 after spawning. If CCV steelhead were present in the action area, the likelihood of survival would be low, as current conditions do not reliably provide suitable rearing or migratory habitat.

Steelhead have been captured in the three main tributaries of the San Joaquin River: the Stanislaus, Tuolumne, and Merced Rivers. However, they likely do not currently occur in the San Joaquin River mainstem upstream of the Sack and Mendota Dams, which includes the action area (Eilers *et al.* 2010). Two successive years of monitoring in 2012 and 2013 failed to capture CCV steelhead in reaches downstream of the action area, leading to the belief that CCV steelhead have been extirpated from all reaches of the SJRRP Restoration Area (SJRRP 2012, SJRRP 2015). However, CCV steelhead were observed near the action area during flood conditions in the mid-1990's (R. Reed, *personal communication*, 2016) when the river flowed between Friant Dam and the Merced River. Monitoring would continue in the downstream reaches of the SJRRP Restoration Area as part of the CCV steelhead Monitoring Plan (SJRRP 2015) .

Presence of anadromous fish upstream of the action area would initially be controlled by the SJRRP. Over the course of proposed action construction, the likelihood of salmonid presence in the area would increase due to the construction of fish passage improvements in the Restoration Area. During the proposed action construction (approximately 2017 through 2018), a temporary trap and haul program (not part of this consultation) is expected to be necessary to provide fish passage in portions of the restoration area. No passage would be provided at Mendota Dam, and

it would continue to be passable only under very high flows. The likelihood of CCV steelhead presence in the action area would continue to be low, unless large flood releases were to occur. CCV steelhead monitoring in Reach 5 would occur when the Hills Ferry Barrier is not in place (mid-December through mid-September) and when restoration flows meet with the Merced River. When monitoring is taking place, fyke traps will be installed and the majority of migrating CCV steelhead will be trapped and released at the mouth of the Merced River. Some CCV steelhead will bypass the fyke traps and continue migrating upstream, potentially entering the action area. If CCV steelhead successfully migrate and spawn in Reach 1, juveniles and kelts could emigrate through the action area during construction. Any CCV steelhead present in the action area during the proposed action construction will likely experience low survival rates as the conditions will not yet reliably provide suitable rearing or migratory habitat.

*Estimation of CCV Steelhead Abundance in the Action Area*

Because no known spawning of CCV steelhead currently exists in the upper reaches of the San Joaquin River an estimate of the possible future number of CCV steelhead, potentially occurring in the action area sometime during or after construction of the proposed action, was calculated using data of non-hatchery origin adult and juvenile CCV steelhead from the Mokelumne River system. NMFS used this approach for the Mendota Pool Bypass and Reach 2B Improvements Project Biological and Conference Opinion (NMFS 2016c), as the best available science.

**Spawning Adults**

The number of non-hatchery origin adult CCV steelhead (i.e., CCV steelhead with intact adipose fins) was divided by the estimated length of available habitat from the Mokelumne River system to obtain the density of fish spawning per mile of habitat.

Between 2002 and 2010, an average of 22 adult CCV steelhead (wild fish greater than 16 inches) per year returned to the river (Mokelumne River Hatchery Steelhead 2012). The length of available habitat on the Mokelumne River was estimated to be 33.5 river miles, which is the distance between the confluence with the Delta and the Camanche Dam, the upstream limit of anadromous salmonid migration on the Mokelumne River (Merz and Setka 2004). This area contains suitable temperatures and flows to support the migration of spawning adults, but not all available habitat is necessarily spawning habitat. Based on this calculation, each river mile of the Mokelumne River supports 0.7 spawning adults annually.

Similarly to the available habitat estimate for Mokelumne River, available habitat for the San Joaquin River was defined as habitat containing suitable temperatures and flows to support spawning adult migration, but not necessarily containing suitable spawning habitat. Currently such habitat is limited to Reach 1A, where available salmonid habitat has been identified using temperature and flow models (U.S. Bureau of Reclamation (Reclamation) 2014). These models predict that a total of 24 river miles of available habitat exists from below Friant Dam (mile post (MP) 267) to State Route 99 Bridge (MP 243; Reclamation 2014).

In order to calculate the number of adult CCV steelhead that could potentially spawn in Reach 1A, the estimated number of spawning adults per river mile in the Mokelumne River was multiplied by the number of river miles containing suitable habitat in Reach 1A. This calculation assumes that Reach 1A would support a density of spawning adults similar to the Mokelumne River, and that the density of spawning habitat in Reach 1A is similar to the Mokelumne River. Based on this calculation, Reach 1A could support 17 spawning adult CCV steelhead annually (rounded up to the nearest whole fish). The rate of CCV steelhead iteroparity is estimated to be between 17 and 23 percent in California (Boggs *et al.* 2008). Therefore, of the total number of estimated spawning adults, 4 kelts could survive spawning and emigrate through Reach 2B annually.

**Emigrating Juveniles**

The number of non-hatchery origin juveniles (i.e., juveniles with intact adipose fins) was taken from rotary screw trap data (Bilski *et al.* 2011, 2013, 2014) with an average annual total of 294 emigrating juveniles (rounded up to the nearest whole fish) from February to June of 2011, 2013, and 2014.

Additionally, an estimated number of emigrating juveniles was calculated using the assumption of 17 spawning adult CCV steelhead in the San Joaquin River (see Spawning Adults calculation above). Assuming the male to female ratio is 1:1, there would be approximately 9 spawning females. A female CCV steelhead can carry approximately 2,000 eggs per kilogram (kg) of body weight (Moyle 2002). Spawning female CCV steelhead weigh an average of 0.68 kg; therefore, a typical spawning female can carry approximately 1,360 eggs. The survival of CCV steelhead from egg to smolt is 0.014 (Williams 2010), so each spawning female can potentially produce 19 smolt annually. If each of the estimated 9 spawning females in the San Joaquin River produced 19 smolt annually, there would be a total of 171 juveniles (rounded up to the nearest whole fish) that could potentially survive, rear in, and emigrate through Reach 2B from February to June.

The number of emigrating juveniles from the Mokelumne River rotary screw trap (294 emigrating juveniles) and the number calculated using the adult fecundity and survival assumptions (171 juveniles) were averaged to obtain a population estimate of 233 emigrating juvenile CCV steelhead in the San Joaquin River.

*2.4.1.2 Status of Central Valley Spring-run Chinook salmon in the Action Area*

Historically, CV spring-run Chinook salmon spawned in the San Joaquin River from about the present day location of Friant Dam to as far upstream as Mammoth Pool (river mile (RM) 322) (McBain and Trush 2002). During the late 1930s and early 1940s, as Friant Dam was being constructed, large runs continued to return to the river. After the dam was completed and the reservoir was filling, runs of 30,000 to 50,000 fish continued to return and spawn in the river downstream of Friant Dam. These runs were completely gone by 1950, as diversions from Friant Dam resulted in the river being dry for extended sections starting at Gravelly Ford and below Sack Dam (McBain and Trush 2002). The occurrence data and available information suggest that CV spring-run Chinook salmon were not recently present within the proposed action area prior to SJRRP restoration activities.

The SJRRP released juvenile CV spring-run Chinook salmon into the San Joaquin River in late winter or early spring of 2014, 2015, 2016, and 2017. The number of juveniles released was 60,114 in 2014, 54,925 in 2015, 104,880 in 2016, and 89,150 in 2017. Temperature and flow conditions at release were sub-optimal for 2014 and 2015, conditions were better for the 2016 release, and near ideal for the 2017 release. The SJRRP plans to release approximately 120,000 juveniles in late winter or early spring of 2018. Juveniles were released downstream of the fish passage barriers significantly downstream from the action area, and the 2018 release will occur near where the releases for previous years occurred. Some of the hatchery-reared juvenile CV spring-run Chinook salmon could have returned to the San Joaquin River as early as spring 2016, but none have been observed to date; likely due to the drought conditions of 2014 and 2015. Due to the more favorable conditions during the 2016 and 2017 releases, jacks from 2017 or three year old fish from 2016 may return in spring of 2018. Approximately 120 adult CV spring-run Chinook salmon from the non-essential experimental population brood stock will be released from Friant Dam in August 2017. These fish may spawn upstream of the action area, in which case some juveniles may be present in the action area towards the end of the proposed 2017 work window. The adult fish to be released in 2017 are excess fish from this year's brood stock. At this point it is not known whether a similar release of adult CV spring-run will occur in 2018. For the purposes of our assessment, we will expect a similar release of adult fish next year.

When adult CV spring-run Chinook salmon do return they would be trapped at the Hills Ferry Barrier and hauled to Reach 1 until there is unimpeded passage, which is anticipated to occur in 2021. Some migrating adult CV spring-run Chinook salmon may bypass the traps at the Hills Ferry Barrier location and continue migrating upstream. In order for these individuals to enter the action area, they would need to ascend both Sack Dam and Mendota Dam, which would likely be possible only during high flow events when the flash boards are removed at Mendota Dam.

When adult CV spring-run Chinook successfully spawn in Reach 1, either after migrating naturally during a flood flow or being trapped and hauled from Reach 5, juveniles could emigrate through the action area during construction: approximately 2017 to 2018 (SJRRP 2015b). So far this has not occurred, so it is difficult to predict how many juveniles may be present in subsequent years. However, Mendota Dam will continue to be passable only during high flow events and the compact bypass will not yet be open. Trapping of migrating adults will continue within Reach 5 and individuals will continue to be hauled to Reach 1 and released.

The NMFS 2014 Recovery Plan identifies the area downstream of Friant as a primary area for the reintroduction of CV spring-run Chinook salmon. The plan identifies recovery criteria, including the need for two distinct populations of CV spring-run Chinook salmon within the Southern Sierra Nevada range, therefore one other population within the San Joaquin Basin would also be needed.

### 2.4.2 Factors Affecting the Species in the Action Area

The action area encompasses a small portion of the area utilized by the CV spring-run Chinook salmon ESU and the CCV steelhead DPS. This section will focus on the specific factors in the action area that are most relevant to the proposed project.

The magnitude and duration of peak flows during the winter and spring are reduced by water impoundment in upstream reservoirs affecting listed salmonids in the action area. Instream flows during the summer and early fall months have increased over historic levels for deliveries of municipal and agricultural water supplies. Flows released from Millerton Reservoir through Friant Dam have generally dried up or gone subsurface before or once reaching Gravelly Ford, and water that is pumped from the Delta via the Delta Mendota Canal forms Mendota Pool at the bottom of reach 2B. Mendota Pool has been dewatered multiple times for construction and maintenance of water conveyance infrastructure. Overall, water management now reduces natural variability by creating more uniform flows year-round. Current flood control practices upstream require peak flood discharges to be held back and released over a period of weeks to avoid overwhelming the flood control structures downstream of the reservoirs (*i.e.* levees and bypasses). Consequently, managed flows in the mainstem of the river often truncate the peak of the flood hydrograph and extended the reservoir releases over a longer period. These actions reduce or eliminate the scouring flows necessary to mobilize gravel and clean sediment from the spawning reaches of the river channel and disrupt natural sediment transfer in general.

High water temperatures also limit habitat availability for listed salmonids in the lower San Joaquin River. High summer water temperatures in the lower San Joaquin River can exceed 72°F, and create a thermal barrier to the migration of adult and juvenile salmonids (Myers *et al.* 1998). In addition, water diversions at the dams (*i.e.* Friant, Goodwin, La Grange, Folsom, Nimbus, and other dams) for agricultural and municipal purposes have reduced in-river flows below the dams. These reduced flows frequently result in increased temperatures during the critical summer months which potentially limit the survival of juvenile salmonids (Reynolds *et al.* 1993) in these tailwater sections.

Point and non-point sources of pollution resulting from agricultural discharge and urban and industrial development occur upstream of and within the action area. Environmental stressors as a result of low water quality can lower reproductive success and may account for low productivity rates in fish. Organic contaminants from agricultural drain water, urban and agricultural runoff from storm events, and high trace element (*i.e.* heavy metals) concentrations may deleteriously affect early life-stage survival of fish in the San Joaquin River (U.S. Fish and Wildlife Service (USFWS) 1995).

Downstream migration barriers, which represent an important impact to adult migration present in the action area, are discussed in the *Status of the Species in the Action Area* section (section 2.4.1) above.

The transformation of the San Joaquin River from a meandering waterway lined with a dense riparian corridor, to a highly leveed system under varying degrees of control over riverine erosional processes resulted in homogenization of the river, including effects to the river's sinuosity. In addition, the change in the ecosystem as a result of the removal of riparian vegetation in the Delta likely impacted potential prey items and species interaction that listed salmonids would experience while holding.

2.4.3 NMFS' Salmon and Steelhead Recovery Plan Action Recommendations

The NFMS recovery plan that includes both CCV steelhead and CV spring-run Chinook salmon (NMFS 2014), identifies recovery goals for the San Joaquin River Restoration Program area population which includes the action area. Recovery efforts are focused on addressing several key stressors including: (1) elevated water temperatures affecting adult migration and holding; (2) low flows and poor fish passage facilities, affecting attraction and migratory cues of migrating adults; and (3) possible catastrophic events (e.g. fire or volcanic activity). Recovery actions identified in the recovery plan that are relevant to this consultation include: implementing restoration flows outlined in the SJRRP settlement agreement, reintroducing CV spring-run Chinook salmon, implementing channel modifications as outlined in the SJRRP settlement agreement, minimizing entrainment to non-viable migration pathways, and construction of a Mendota Pool Bypass.

2.4.4 Climate Change

Rangewide climate change information for CCV steelhead and CV spring-run is presented in section 2.2 of this opinion.

In the future, the action area will likely experience additional changes in environmental conditions due to climate change. These changes may overlap with the direct and indirect effects of long term proposed actions. Thus, for long-term actions, we can no longer assume current environmental variability adequately describes environmental baseline conditions. Instead, we need to project baseline conditions into the future, synchronizing our projections with the duration of the effects of the proposed action we are analyzing.

Within the context of the relatively brief period of time over which the proposed action is scheduled to be constructed, however, the near term effects of global climate change are unlikely to result in any perceptible declines to the overall health or distribution of the listed populations of anadromous fish within the action area that are the subject of this consultation.

## 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.

Adverse effects on juvenile CV spring-run Chinook salmon and CCV steelhead during construction may occur if adults successfully reach the upper project area, spawn, and produce offspring. As part of the reintroduction, juvenile CV spring-run Chinook salmon are trapped if found in the area, but it is likely that not all juveniles would be found. Although the reintroduced spring-run Chinook salmon population does not have take prohibitions under Section 9 of ESA because of their designation as an Experimental Population under the 10(j) rule, we will analyze the effects of the proposed action on that population, along with CCV steelhead.

### 2.5.1 Instream Construction Activities

Listed salmonids may be impacted by instream construction activities. Salmonid behavioral response to noise and disturbance caused by construction activities, may be to migrate downstream. Fish that migrate downstream may be exposed to short term stress from being displaced from their rearing area and needing to locate a new rearing area, which may result in: crowding and competition with resident fish for food and habitat, which can lead to reduced growth, and may be subject to increased predation risk while they are locating a new rearing area, leading to reduced survival. However, displaced fish will likely locate to areas downstream that have suitable habitat and low competition, therefore these potential adverse effects are not expected to occur. Because only a small number of listed salmonids are likely to be in the action area and temporarily displaced by the proposed project, it is not expected to affect the survival chances of individual fish or affect the population based on the size of the area that will be affected and the small number of fish likely to be displaced.

Instream construction activities are expected to cause mortality of, or reduced abundance of benthic aquatic macroinvertebrates within the area where the bridge repairs will occur. Effects to aquatic macroinvertebrates from coarse sediment smothering will be temporary because post construction the stream will be restored to its original contours and rapid recolonization (about two weeks to two months) is expected (Merz and Chan 2005). Furthermore, downstream drift is expected to temporarily benefit any downstream, drift-feeding organisms, including juvenile salmonids. The benthic macroinvertebrate production within the site is expected to increase when the project is complete. The amount of food available for juvenile salmonids and other listed salmonids is therefore expected to return to at least to pre-project conditions.

Although juvenile salmonids may be exposed to construction areas with reduced prey base, juveniles will be able to retreat to adjacent suitable habitat, and food resources will only be temporarily impacted. Therefore, effects of instream construction activities are expected to be minor and are unlikely to result in injury or death. Adult CCV steelhead are not expected to be present during instream construction activities, thus impacts to this life stage of these species is considered improbable.

### 2.5.2 Unintentional Spill of Hazardous Substances

During construction, the potential exists for spills or leakage of toxic substances that could enter the San Joaquin River. Refueling, operation, and storage of construction equipment and materials could result in accidental spills of pollutants (e.g., fuels, lubricants, concrete, sealants, and oil). High concentrations of contaminants can cause direct and indirect effects on fish. Direct effects include mortality from exposure or increased susceptibility to disease that reduces the overall health and survival of the exposed fish. The severity of these effects depends on the contaminant, the concentration, duration of exposure, and sensitivity of the affected life stage. A potential indirect effect of contamination is reduced prey availability; invertebrate prey survival could be reduced following exposure, therefore making food less available for fish. Fish consuming infected prey may also absorb toxins directly. For salmonids, potential direct and indirect effects of reduced water quality during project construction will be addressed by utilization of vegetable-based lubricants and hydraulic fluids in equipment operated in the wet channel, and by

implementing the construction site housekeeping measures incorporated in the project SWPPP. These measures include provisions to control erosion and sedimentation, as well as a Spill Prevention and Response Plan to avoid, and if necessary, clean up accidental releases of hazardous materials.

With these best management practices in place, impacts from contaminants are expected to be improbable for listed salmonids.

2.5.3 Fish Rescue and Relocation

Prior to dewatering the area behind the sheet piles, fish will be captured and removed from the area to be dewatered. The fish capture/relocation is included in this project in order to avoid or minimize injury or death to fish due to dewatering. However, the handling of fish rescue itself may cause stress, injury, or death, even though it will be conducted by a qualified fish biologist.

2.5.4 Sediment and Turbidity

Construction activities related to the scour retrofit will temporarily disturb soil and stream bed sediments, resulting in the potential for temporary increases in turbidity and suspended sediments in the action area. Turbidity plumes are expected to affect a portion of the channel width and extend up to 600 feet downstream of the site. Construction related increases in sedimentation and siltation above the background level could potentially affect fish species and their habitat by reducing egg and juvenile survival, interfering with feeding activities, causing breakdown of social organization, and reducing primary and secondary productivity. The magnitude of potential effects on fish depends on the timing and extent of sediment loading and flow in the river before, during, and immediately following construction.

High concentrations of suspended sediment can have both direct and indirect effects on salmonids. The severity of these effects depends on the sediment concentration, duration of exposure, and sensitivity of the affected life stage. Based on the types and duration of proposed in-water construction methods, short-term increases in turbidity and suspended sediment may disrupt feeding activities or result in avoidance or displacement of fish from preferred habitat. Juvenile salmonids have been observed to avoid streams that are chronically turbid (Lloyd 1987) or move laterally or downstream to avoid turbidity plumes (Sigler *et al.* 1984). Sigler *et al.* (1984) found that prolonged exposure to turbidities between 25 and 50 nephelometric turbidity units (NTUs) resulted in reduced growth and increased emigration rates of juvenile coho salmon and steelhead compared to controls. These findings are generally attributed to reductions in the ability of salmon to see and capture prey in turbid water (Waters 1995). Chronic exposure to high turbidity and suspended sediment may also affect growth and survival by impairing respiratory function, reducing tolerance to disease and contaminants, and causing physiological stress (Waters 1995). Berg and Northcote (1985) observed changes in social and foraging behavior and increased gill flaring (an indicator of stress) in juvenile coho salmon at moderate turbidity (30-60 NTUs). In this study, behavior returned to normal quickly after turbidity was reduced to lower levels (0-20 NTU).

Any increase in turbidity associated with instream work is likely to be brief and occur only in the vicinity of the site, attenuating downstream as suspended sediment settles out of the water column. Temporary spikes in suspended sediment may result in behavioral avoidance of the site by fish; several studies have documented active avoidance of turbid areas by juvenile and adult salmonids (e.g. Sigler *et al.* 1984, Lloyd 1987, Servizi and Martens 1992).

Individual fish that encounter increased turbidity or sediment concentrations will likely move away from affected areas into more suitable surrounding habitat. In-water work will only occur from June 15 to October 15, this will limit the duration of the turbidity effects. Gravel will be washed to reduce the introduction of fine sediments to the stream.

Juvenile CCV steelhead and juvenile and adult spring-run Chinook salmon may be present during instream construction activities, and thus subject to the above effects. However, due to the short duration of a few days, the effects of increased turbidity will be minor and are unlikely to result in stress, increased predation, decreased feeding, injury, or death. Adult CCV steelhead are not expected to be present during activities that may increase turbidity.

Sedimentation is known to have lethal and sublethal effects to incubating salmonids eggs by decreasing dissolved oxygen transport between spawning gravel. Sediment also blocks micropores on the surface of incubating eggs, inhibiting oxygen transport and creates an additional oxygen demand through the chemical and biological oxidation of organic material (Suttle *et al.* 2004, Greig *et al.* 2007, Kemp *et al.* 2011). However, due to the location and timing of construction CCV steelhead and CV spring-run Chinook salmon eggs will not be present, and thus adverse impacts to incubating eggs are not expected to occur.

### 2.5.5 Acoustic Effects

All of the pile driving for this project will be accomplished using vibratory hammers instead of impact hammers. Therefore, the expected peak and accumulated sound pressures are anticipated to be below the threshold for injury to fishes of all sizes from pile driving activities. Therefore, the potential effects from the sound emanating from the action of pile driving is expected to not reach a level where adverse impacts are expected to occur.

### 2.5.6 Critical Habitat

There is no designated CCV steelhead critical habitat within the action area. Therefore, no effects to critical habitat associated with the proposed project are expected to occur.

## 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 to distinguish between the action area's future environmental conditions caused by cumulative effects and those caused by global climate change, and thus part of the environmental baseline. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (section 2.4.4).

### 2.6.1 Water Diversions

Water diversions for municipal and industrial use are found near the action area. Depending on the size, location, and season of operation, these unscreened diversions entrain and kill many life stages of aquatic species, including juvenile listed anadromous species.

### 2.6.2 Increased Urbanization

Increases in urbanization and housing developments can impact habitat by altering watershed characteristics, and changing both water use and stormwater runoff patterns. Increased growth will place additional burdens on resource allocations, including natural gas, electricity, and water, as well as on infrastructure such as wastewater sanitation plants, roads and highways, and public utilities. Some of these actions, particularly those which are situated away from waterbodies, will not require Federal permits, and thus will not undergo review through the ESA section 7 consultation process with NMFS.

Increased urbanization also is expected to result in increased recreational activities in the region. Among the activities expected to increase in volume and frequency is recreational boating. Boating activities typically result in increased wave action and propeller wash in waterways. This potentially will degrade riparian and wetland habitat by eroding channel banks and mid-channel islands, thereby causing an increase in siltation and turbidity. Wakes and propeller wash also churn up benthic sediments thereby potentially re-suspending contaminated sediments and degrading areas of submerged vegetation. This in turn will reduce habitat quality for the invertebrate forage base required for the survival of juvenile salmonids moving through the system. Increased recreational boat operation is anticipated to result in more contamination from the operation of gasoline and diesel powered engines on watercraft entering the associated water bodies.

### 2.6.3 Rock Revetment and Levee Repair Projects

Cumulative effects include non-Federal riprap projects. Depending on the scope of the action, some non-Federal riprap projects carried out by state or local agencies do not require Federal permits. These types of actions and illegal placement of riprap occur within the Tuolumne River watershed. The effects of such actions result in continued degradation, simplification and fragmentation of riparian and freshwater habitat.

## 2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species 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 (section 2.2), to formulate the agency's opinion as to whether the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution.

CCV steelhead have experienced significant declines in abundance and available habitat in the California Central Valley relative to historical conditions. The rangewide status of the species and critical habitat (section 2.2) and environmental baseline (section 2.4) detail the current status of the DPS, where the proposed project is to occur. Section 2.2.2 discusses the vulnerability of listed species to climate change projections in the California Central Valley. In light of the predicted impacts of climate change, it has been hypothesized that summer temperatures and flow levels will become unsuitable for salmonid survival in many parts of the Central Valley.

Cumulative effects that may affect the action area include road work, irrigation conveyance, and increased human population growth resulting in urbanization and development of floodplain habitats.

### 2.7.1 Effects of the Proposed Project to Listed Species

There are a number of potential effects of the proposed project to various salmonid life stages, as described in section 2.5 above. However, the likelihood of presence of any life stages of salmonid species in the action area during construction is low, as described in section 2.4 above. Juvenile and adult salmonids will most likely not be able to access the action area during construction because there will not be volitional passage. The only life stages of CCV steelhead that are expected to potentially be present in the action area during construction are juveniles. Due to the release of remainder brood stock adult CV spring-run upstream of the action area, adult CV spring-run Chinook may be present in the action area. If those adults successfully spawn upstream of the action area, juveniles may be present in the action area towards the end of the 2017 in-water work window. Juvenile salmonids or adult CV spring-run Chinook salmon may be injured or killed when they are captured and relocated from the area to be dewatered. However, the measures proposed will minimize the likelihood of injuries and mortalities to listed salmonids. Up to 20 juvenile CCV steelhead and 20 juvenile CV spring-run Chinook salmon may need to be relocated from the immediate vicinity of the construction activities each construction season. During capture and relocation up to 1 individual juvenile CCV steelhead may be injured and another 1 may die. Some adult CV spring-run Chinook from the non-essential experimental population may be present during construction in 2017 and 2018. Up to 12 adult CV spring-run Chinook salmon may need to be relocated each year.

Juvenile listed salmonids or adult CV spring-run Chinook salmon could be impacted through construction equipment operating in or near the river, unintentional spill of hazardous substances, increased turbidity, and noise from pile driving. With the minimization measures,

avoidance, and best management practices included with the proposed project, potential injuries or mortalities associated with these activities are either not expected to be adverse, or not expected to occur.

2.7.2 Effects of the Proposed Project to Critical Habitat

There is no designated critical habitat within the action area. Therefore, no effects to critical habitat associated with the proposed project are expected to occur.

2.7.3 Summary

The adverse effects that are anticipated to result from the proposed project are not the type or magnitude that would be expected to appreciably reduce the likelihood of survival and recovery of the affected species in the action area, or at the ESU/DPS level. VSP parameters of spatial structure, diversity, abundance, and productivity are not expected to be appreciably reduced.

Within the context of the relatively brief period of time over which the proposed action is scheduled to occur, the short term effects of global climate change are unlikely to result in any perceptible declines to the overall health or distribution of the listed populations of anadromous fish within the action area that are the subject of this consultation.

## 2.8 Conclusion

After reviewing and analyzing the current status of the listed species, 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' opinion that the proposed action is not likely to jeopardize the continued existence of CCV steelhead.

After reviewing and analyzing the current status of the listed species, 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' opinion that the proposed action is not likely to jeopardize the continued existence of CV spring-run Chinook salmon. There will be no take issued for CV spring-run Chinook salmon as part of this opinion, and the experimental population of CV spring-run Chinook salmon will not be addressed in the ITS. The analysis on CV spring-run Chinook salmon is for informational purposes only.

## 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

NMFS anticipates incidental take of juvenile CCV steelhead with the proposed project. Specifically, NMFS anticipates that juvenile CCV steelhead may be harassed, captured, injured, or killed as a result of project implementation as they will likely be present in the action area during the scheduled work period.

Take of CCV steelhead may occur due to capture and relocation. Take is quantified in table 2 below.

Table 2. Annual (2017 and 2018) take associated with capture and relocation.

| Species | Life Stage | Expected Take in the Form of capture | Expected Take in the Form of Injury | Expected Take in the Form of Mortality |
|---|---|---|---|---|
| CCV steelhead | Juvenile | 20 | 1 | 1 |

### 2.9.2 Effect of the Take

In the 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

RPMs 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. Measures shall be taken to minimize take associated with capturing and relocating fish.
2. Measures shall be taken to monitor and report on fish presence during dewatering.

### 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 will likely lapse.

1. The following terms and conditions implement reasonable and prudent measure 1:
    a. Fish capture and relocation shall be conducted by a NMFS approved qualified fish biologist.
    b. Handling of fish shall be conducted during the time of day that water temperatures are the coolest, to reduce the chance of fish mortalities.

2. The following term and condition implements reasonable and prudent measure 2:
    a. Caltrans shall submit to NMFS a report describing the species exposure and incidental take resulting from the proposed action. The report shall be submitted to NMFS within 60 days of project completion. The report shall be submitted to the following address:

        Maria Rea
        California Central Valley Area Office
        National Marine Fisheries Service
        650 Capitol Mall, Suite 5-100
        Sacramento CA 95814
        Phone: (916) 930-3600
        FAX: (916) 930-3629

## 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).

(1) Caltrans should provide a NMFS-approved Worker Environmental Awareness Training Program for construction personnel to be conducted by a NMFS-approved biologist for all construction workers prior to the commencement of construction activities. The program should provide workers with information on their responsibilities with regard to anadromous fish, their habitat, an overview of the life-history of all the species, information on take prohibitions, protections under the ESA, and an explanation of terms and conditions identified in this opinion. Written documentation of the training must be submitted to NMFS.

(2) A report should be submitted to NMFS within 30 days of the completion of training. Completion of this training is consistent with agency requirements set forth in section 7(a)(1).

(3) Caltrans should support and promote aquatic and riparian habitat restoration within the San Joaquin River and other watersheds, especially those with listed aquatic species. Practices that avoid or minimize negative impacts to listed species should be encouraged.

(4) Caltrans should employ measures to minimize effects to the experimental population of CV spring-run Chinook, especially those effects associated with capturing and relocating fish from the area to be dewatered.

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.

### 2.11 Reinitiation of Consultation

This concludes formal consultation for Caltrans' San Joaquin River Bridge Scour and Seismic Retrofit Project.

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. The MSA (section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 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) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by the Corps and descriptions of EFH for Pacific Coast salmon contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce (PFMC 2014).

## 3.1 Essential Fish Habitat Affected by the Project

EFH designated under the Pacific Coast Salmon Fisheries Management Plan (FMP) may be affected by the proposed project. EFH is designated under the FMP within the action area for all runs of Chinook salmon. Habitat Areas of Particular Concern (HAPCs) that may be either directly or indirectly adversely affected include **(1)** complex channels and floodplain habitats, **(2)** thermal refugia and **(3)** spawning habitat (see descriptions of salmon HAPCs in Appendix A to the Pacific Coast Salmon FMP).

## 3.2 Adverse Effects on Essential Fish Habitat

NMFS has concluded that adverse effects to the HAPCs listed in section 3.1 above are reasonably certain to occur during construction activities, and the new bridge structure.

Below is a list of adverse effects to EFH HAPCs associated with the proposed project. Descriptions of the stressors listed below are described in section 2.5 (Effects of the Action). Affected HAPCs are indicated by the parenthetical number, corresponding to the list in section 3.1:

Sedimentation and turbidity

- Reduced habitat complexity **(1, 3)**

Removal of riparian vegetation

- Degraded water quality **(1, 3)**
- Reduction in aquatic macroinvertebrate production **(1)**

In addition, the function of EFH may be impacted through spills of hazardous materials.

It is expected that any increase in turbidity in the San Joaquin River will be localized and temporary. Although riparian vegetation is currently limited in the project footprint, further removal, is likely to result in adverse effects to EFH..

## 3.3 Essential Fish Habitat Conservation Recommendations

The following is an EFH conservation recommendation for the proposed project:

(1) NMFS recommends that Caltrans should adopt the conservation recommendations in section 2.10, numbers 1 and 3, in order to protect, by avoiding or minimizing adverse effects described in 3.2 above.

### 3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, Caltrans must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

### 3.5 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. FISH AND WILDLIFE COORDINATION ACT

The purpose of the Fish and Wildlife Coordination Act (FWCA) is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development (16 USC 661). The FWCA establishes a consultation requirement for Federal agencies that undertake any action to modify any stream or other body of water for any purpose, including navigation and drainage (16 USC 662(a)), regarding the impacts of their actions on fish and wildlife, and measures to mitigate those impacts. Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the purpose of conserving fish and wildlife resources, and providing equal consideration for these resources. NMFS' recommendations are provided to conserve wildlife resources by preventing loss of and damage to such resources. The FWCA allows the opportunity to provide recommendations for the conservation of all species and habitats within NMFS' authority, not just those currently managed under the ESA and MSA.

The following recommendation applies to the proposed action:

(1) Caltrans should post interpretive signs within the action area describing the presence of listed fish as well as highlighting their ecological and cultural value.

The action agency must give these recommendations equal consideration with the other aspects of the proposed action so as to meet the purpose of the FWCA.

This concludes the FWCA portion of this consultation.

## 5. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The 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.

### 5.1 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 are the Corps. Other interested users could include the UPRR. Individual copies of this opinion were provided to the Corps. This opinion will be posted on the Public Consultation Tracking System website (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts). The format and naming adheres to conventional standards for style.

### 5.2 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.

### 5.3 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 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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