



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

Refer to NMFS No: WCR-2018-11046

March 18, 2019

Laura Loeffler
Environmental Branch Chief
District 3
Department of Transportation
703 B Street
Marysville, California 95901

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for the Ord Ferry Bridge Replacement Project on Little Chico Creek.

Dear Ms. Loeffler:

Thank you for your letter on October, 3, 2018, requesting initiation of consultation with the 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 Ord Ferry Bridge Replacement Project (Project) on Little Chico Creek.

This biological opinion (BO) is based on the final biological assessment (BA) for the Project, in Butte County, California. Based on the best available scientific and commercial information, the BO concludes that the Project is not likely to jeopardize the continued existence of the federally listed threatened California Central Valley steelhead (*Oncorhynchus mykiss*) or Central Valley spring-run Chinook salmon (*O. tshawytscha*) and is not likely to destroy or adversely modify their designated critical habitat. NMFS has included an incidental take statement with reasonable and prudent measures and nondiscretionary terms and conditions that are necessary and appropriate to avoid, minimize, or monitor incidental take of listed species associated with the Project.

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.

Please contact Lyla Pirkola at the California Central Valley Office of NMFS at (916) 930-5615 or via email at lyla.pirkola@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,


Maria Rea
Assistant Regional Administrator

Enclosure

cc: To the file 151422-WCR2018-SA00484
Brooks Taylor, Project Biologist, brooks.taylor@dot.ca.gov
Raymond Cooper, Civil Engineer, rcooper@buttecounty.net





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**Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and
 Fish and Wildlife Coordination Act Recommendations**

Ord Ferry Road at Little Chico Creek Bridge Replacement Project

National Marine Fisheries Service Public Tracking Consultation Number: WCR-2018-11046

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 (<i>Oncorhynchus mykiss</i>)	Threatened	Yes	No	No	No
Central Valley spring-run Chinook salmon (<i>O. tshawytscha</i>)	Threatened	Yes	No	No	No

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

Issued By:


 Maria Rea
 Assistant Regional Administrator

Date:

MAR 18 2019



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1 INTRODUCTION

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

1.1 Background

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

Because the proposed action would modify a stream or other body of water, NMFS also provides a recommendation for the purpose of conserving fish and wildlife resources, and enabling the Federal agency to give equal consideration with other project purposes, as required under the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661 et seq.).

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 the [NOAA Institutional Repository](#), after approximately two weeks. A complete record of this consultation is on file at NMFS California Central Valley Office.

1.2 Consultation History

- On October 24, 2018, NMFS received a consultation request letter and Biological Assessment (BA) from Caltrans requesting formal consultation on the Ord Ferry Bridge Replacement Project on Little Chico Creek (Project).
- On November 6, 2018, NMFS requested additional Project information.
- On November 16, 2018, NMFS and Caltrans met on-site to discuss the Project.
- Over the next few weeks, various dialog was exchanged about Project effects.
- On December 10, 2018, NMFS received sufficient information and consultation was initiated.

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 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)].

Project Description

Butte County in conjunction with the California Department of Transportation (Caltrans) proposes to construct a replacement bridge (Project) for the Ord Ferry Bridge (No. 12C0242) over the Little Chico Creek due to its structurally deficient status. The Project site is located in Butte County, California on Ord Ferry Road approximately 3.5 miles west of Dayton Road near the town of Dayton. The Project is located within the Ord Ferry US Geological Survey (USGS) quadrangle in Section 36, Township 21N, Range 1W. Work would occur over two seasons from 2019 to 2020, activities conducted in the active channel would be limited to May 1 through October 31, with a water diversion being used between May 1 and June 30 should water be present.

Immediately prior to in-stream activities or installation of water diversion structures, the following procedures would be used:

- If necessary all large rocks, logs, debris, and other obstructions would be removed from the areas to be dewatered to reduce places of fish refuge and prevent snagging of seine nets.
 - Woody debris with diameter greater than 12 inches removed during dewatering will be returned to the creek following construction activities
- To keep fish out of the work area during installation of the culvert pipes and temporary work platform, block nets will be installed upstream and downstream of the work area and maintained until the creek has been diverted.
 - Block nets will consist of 0.25 inch mesh nets spanning the entire channel and adequately secured to the channel bottom
- A NMFS approved biologist will capture and relocate fish using authorized methods.
 - Seining is anticipated; should electrofishing be necessary, methods as provided in NMFS Fisheries Guidelines for Electrofishing Waters Containing Salmonids listed under the ESA, June 2000 will be used to maximize efficient and safe fish capture, removal and relocation.

Proposed New Bridge

The proposed replacement of the Ord Ferry Bridge would be approximately 640 feet long by 43 feet wide and carry two (2) twelve-foot lanes and two (2) eight-foot shoulders. The bridge superstructure construction within the floodplain will utilize cast-in-place methodology with traditional concrete forms and temporary supports consisting of falsework beams, timber bents, and timber pads. Intermediate supports for the reinforced concrete slab bridge are expected to be small diameter pile extensions founded on cast-in-steel-shell (CISS) piles. The CISS pile shafts will be driven using a crane and pile hammer. Bridge abutments are anticipated to be reinforced concrete seat style abutments founded on driven 16-inch piles. Impact pile driving is anticipated for installation of these piles. Pile driving occurring from May 1- June 30 will occur on land a minimum of 10 meters from Little Chico Creek. Pile driving from July 1 – October 31 will be moving in an easterly direction away from Little Chico Creek, during this time the creek is anticipated to be dry.

Dewatering

Once fish have been removed, a clear water diversion would be installed. The diversion would be constructed of “fish rock” (washed, uncrushed, rounded, natural river rock) and covered with clean crushed angular gravel. Upstream and downstream cofferdams constructed of fish rock, gravel and/or sandbags, and plastic sheeting would be constructed around the plastic culverts carrying flows. Culvert size will be determined using NMFS Hydraulic Design Method criteria (NMFS 2001).

If after the temporary water diversion is installed, pooled water is still present within the project area, water would be pumped out according to NMFS Southwest Region’s Juvenile Fish Screen Pump Criteria for Pump Intakes. The outflow end of the pump will be equipped with a sediment filter to dissipate outlet flows and serve as backup filtration media. Water being pumped from pools would be drawn down incrementally by 50%, 75%, 90%, and 100% to facilitate fish capture and relocation.

Following completion of each construction season, the diversion would be removed from Little Chico Creek. Fish rock left in the creek channel would be redistributed by hand to ensure it does not form a barrier to flows or migration.

In Channel Work

Permanent placement of a portion of the new bridge supports will occur in Little Chico Creek as well as the removal of the old bridge supports. The existing number of bridge columns (piers) in Little Chico Creek is 12 and the proposed number of piers in Little Chico Creek is 14. The existing piers proposed for removal in the OHWM of Little Chico Creek amount to 0.0011-acre (47ft²). The piers proposed for installation in the OHWM of Little Chico Creek amounts to 0.0004-acre (16ft²). There will be an increase of 0.0007-acre (approximately 31ft²) of habitat within the ordinary high water mark (OHWM) of Little Chico Creek.

Permanent rock slope protection (RSP) is required near both bridge abutment supports and abutment slopes to prevent erosion and scour, a total of approximately 0.04acres of RSP would be placed, all outside of the OWHM.

Construction of the bridge foundations would require working with concrete materials including trucks and pumps. For cast-in-place construction activities, formwork and falsework will be required. The first construction stage would reduce the existing bridge to a single eleven-foot traffic lane and demolish a portion of the existing bridge. A portion of the new bridge would then be constructed and vehicle traffic opened up onto the new bridge portion. The second stage would remove the remainder of the existing bridge and construct the remainder of the new bridge.

Temporary Access Road

A temporary access road would need to be installed from May 1 to October 31 in both seasons of construction. As part of the temporary access road a clear water diversion using appropriately sized culverts and clean river gravel will be installed in Little Chico Creek. The temporary road including all culverts will be removed on or before October 31 of each construction season.

Removal of 37 trees within the Little Chico Creek floodplain will be required, trees will be mitigated for onsite and in-kind at a 3:1 ratio.

Demolition

A catchment device (e.g., plywood, plastic over chain-link fence, woven mesh fabric, etc.) would be put in place to prevent demolition debris from entering the creek. The superstructure would be disassembled by saw cutting sections and removing them with an excavator or similar piece of equipment. Removal of substructure supports would be achieved through saw cuttings and pulling out piers/footings with an excavator or similar piece of equipment. If existing piers cannot be pulled out they will be cut three feet below grade, removed, and the hole back filled with native soil and spawning sized gravel.

Equipment

It is anticipated that excavators, dozers, cranes, pavers, dump trucks, concrete trucks, concrete pumps, pile driving hammers, and pile driving equipment will be required to construct the new bridge. Construction of foundations will require concrete trucks and pumps. For cast-in-place construction activities, formwork and falsework will be required.

Scheduling

Construction is anticipated to begin in the summer of 2019 and staged for two construction seasons. Approximately 18 months of single lane traffic control is anticipated. The first stage would reduce the existing bridge to a single eleven-foot traffic lane and demolish a portion of the existing bridge. A portion of new bridge would then be constructed with a thirteen-foot lane, and traffic would be moved onto the new bridge. The second stage would remove the remainder of the existing bridge and construct the remainder of the new bridge.

1.4 Proposed Avoidance and Minimization Measures

The following are Best Management Practices (BMPs) proposed by Caltrans, intended to minimize overall impacts associated with the proposed action:

- The Project would replace the bridge on the existing alignment which minimizes clearing of riparian habitat when compared to placing the bridge on a new alignment.
- The proposed bridge design will result in a reduction of piers within the Little Chico Creek floodplain.
- If water is present in the creek May 1 - October 31 then a clear water diversion using appropriately sized culverts and clean river gravel will be installed in Little Chico Creek.
- The temporary road including all culverts and will be removed on or before October 31 of each season. The clean river gravel will be left at the end of construction to provide habitat for aquatic organisms.
- Any pile driving that occurs between May 1 and June 30 when water may be present will occur on land a minimum of 10 meters from Little Chico Creek.
- Disturbance to the channel and banks of Little Chico Creek and/or removal of vegetation will be kept to the minimum necessary to complete Project activities.
- Portions of the streambed of Little Chico Creek disturbed by construction activities will be returned to a pre-construction condition.

- The banks of Little Chico Creek and all upland areas will be seeded using a native seed mix at the end of each construction season.
- Trees removed will be mitigated for on-site and in-kind at a 3:1 ratio.

Species Specific Best Management Practices (BMPs)

- If flowing water is present, a silt screen would be fully established and functioning properly before any in-stream construction takes place in order to prevent sediment drift. The silt screen would be removed following installation of the clear water diversion to avoid inhibiting the movement of aquatic wildlife.
- An erosion control plan will be developed and implemented prior to the wet season (November 1 – April 1) to avoid sediment entering the creek.
 - Applicable BMPs would include the use of straw bales, mulch or wattles, silt fences, filter fabric and ultimately seeding and revegetating.
- Water pumped from dewatered areas will not be discharged back into Little Chico Creek.
- All fueling and/or equipment maintenance would occur 50 feet from all water bodies and riparian areas.
- A spill prevention plan (SPP) and storm water pollution prevention plan (SWPPP) would be developed and implemented by the contractor. Spill prevention measures would include stockpiling absorbent booms, staging hazardous materials away from the creek, maintaining and checking construction equipment to prevent fuel and lubrication leaks. Absorbent booms would be available within 50 feet of the live channel during all in channel work for quick containment of any spills. Any chemical spill within the active channel of Little Chico Creek would be reported to NMFS within 48 hours.
- A NMFS approved fish biologist would perform fish relocation according to a NMFS approved plan

“Interrelated actions” are those that are part of a larger action and depend on the larger action for their justification. “Interdependent actions” are those that have no independent utility apart from the action under consideration (50 CFR 402.02). There are no interdependent or interrelated activities associated with this Project.

2 ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

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

2.1 Analytical Approach

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

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

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

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

- Identify the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.

- Describe the environmental baseline in the action area.

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

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species’ likelihood of both survival and recovery. The species status section also helps to inform the description of the species’ current “reproduction, numbers, or distribution” as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the current function of the essential PBFs that help to form that conservation value. See **Table 1** for species and **Table 2** for critical habitat information.

Table 1. Description of species, current ESA listing classification and summary of species status.

Species	Listing Classification and Federal Register Notice	Status Summary
Central Valley Spring-run Chinook salmon ESU (CV spring-run)	Threatened, 70 FR 37160; June 28, 2005	According to the NMFS (2016b) 5-year species status review, the status of the CV spring-run Chinook salmon ESU, until 2015, has improved since the 2010 5-year species status review. The improved status is due to extensive restoration, and increases in spatial structure with historically extirpated populations (Battle and Clear creeks) trending in the positive direction. Recent declines of many of the dependent populations, high pre-spawn and egg mortality during the 2012 to 2015 drought, uncertain juvenile survival during the drought are likely increasing the ESU's extinction risk.
California Central Valley Steelhead (CCV steelhead)	Threatened, 71 FR 834; January 5, 2006	According to the NMFS (2016a) 5-year species status review, the status of CCV steelhead appears to have changed little since the 2011 status review that concluded that the DPS was in danger of extinction. Most wild CCV 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. The genetic diversity of CCV steelhead has likely been impacted by low population sizes and high numbers of hatchery fish relative to wild fish. The lifehistory 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.

Table 2. Description of critical habitat, designation details, and status summary.

Species	Designation Date and Federal Register Notice	Status Summary
CCV Steelhead	September 2, 2005, 70 FR 52488	Critical habitat for CCV steelhead includes stream reaches of the Feather, Yuba, and American rivers, Big Chico, Butte, Deer, Mill, Battle, Antelope, and Clear creeks, the Sacramento River, as well as portions of the northern Delta. Critical habitat includes the stream channels in the designated stream reaches and the lateral extent as defined by the ordinary high-water line. In areas where the ordinary high-water line has not been defined, the lateral extent will be defined by the bankfull elevation. Physical and biological features considered essential to the conservation of the species include spawning habitat; freshwater rearing habitat; freshwater migration corridors; and estuarine areas.

Global Climate Change

One major factor affecting the rangewide status of the threatened and endangered anadromous fish in the Central Valley and aquatic habitat at large is climate change. Warmer temperatures associated with climate change reduce snowpack and alter the seasonality and volume of seasonal hydrograph patterns (Cohen *et al.* 2000). Central California has shown trends toward warmer winters since the 1940s (Dettinger and Cayan 1995). Projected warming is expected to affect Central Valley Chinook salmon. Because the runs are restricted to low elevations as a result of impassable rim dams, if climate warms by 5 degrees Celsius (°C) (9 degrees Fahrenheit [°F]), it is questionable whether any Central Valley Chinook salmon populations can persist (Williams 2006).

CV spring-run Chinook salmon adults are vulnerable to climate change because they over-summer in freshwater streams before spawning in autumn (Thompson *et al.* 2011). CV spring-run spawn primarily in the tributaries to the Sacramento River, and those tributaries without cold water refugia (usually input from springs) will be more susceptible to impacts of climate change. Although CCV steelhead will experience similar effects of climate change to CV spring-run salmon, as they are also blocked from the vast majority of their historic spawning and rearing habitat, the effects may be even greater in some cases, as juvenile steelhead need to rear in the stream for one to two summers prior to emigrating as smolts. In the Central Valley, summer and fall temperatures below the dams in many streams already exceed the recommended temperatures for optimal growth of juvenile CCV steelhead, which range from 14°C to 19°C (57°F to 66°F).

In summary, observed and predicted climate change effects are generally detrimental to the species (McClure 2011, Wade *et al.* 2013), so unless offset by improvements in other factors, the status of the species and critical habitat is likely to decline over time. The climate change projections referenced above cover the time period between the present and approximately 2100. While there is uncertainty associated with projections, which increases over time, the direction of change is relatively certain (McClure *et al.* 2013).

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).

Effects to biological resources have the potential to extend beyond the footprint of the Project itself, because of this, the action area extends beyond project boundaries in areas where effects could occur to federally listed anadromous fish. Little Chico Creek is the only drainage within the project that has the potential to support listed anadromous fish; therefore, the action area includes the entire Project site and 300 feet south of the Project boundary along Little Chico Creek to account for potential effects due to construction activities such as installation of RSP, pile driving, and bank disturbance. The action area also includes the dirt access roads, temporary road and staging area. The total action area is 15.5 acres encompassing about a 700 foot stretch of Little Chico Creek. (**Figure 1**)

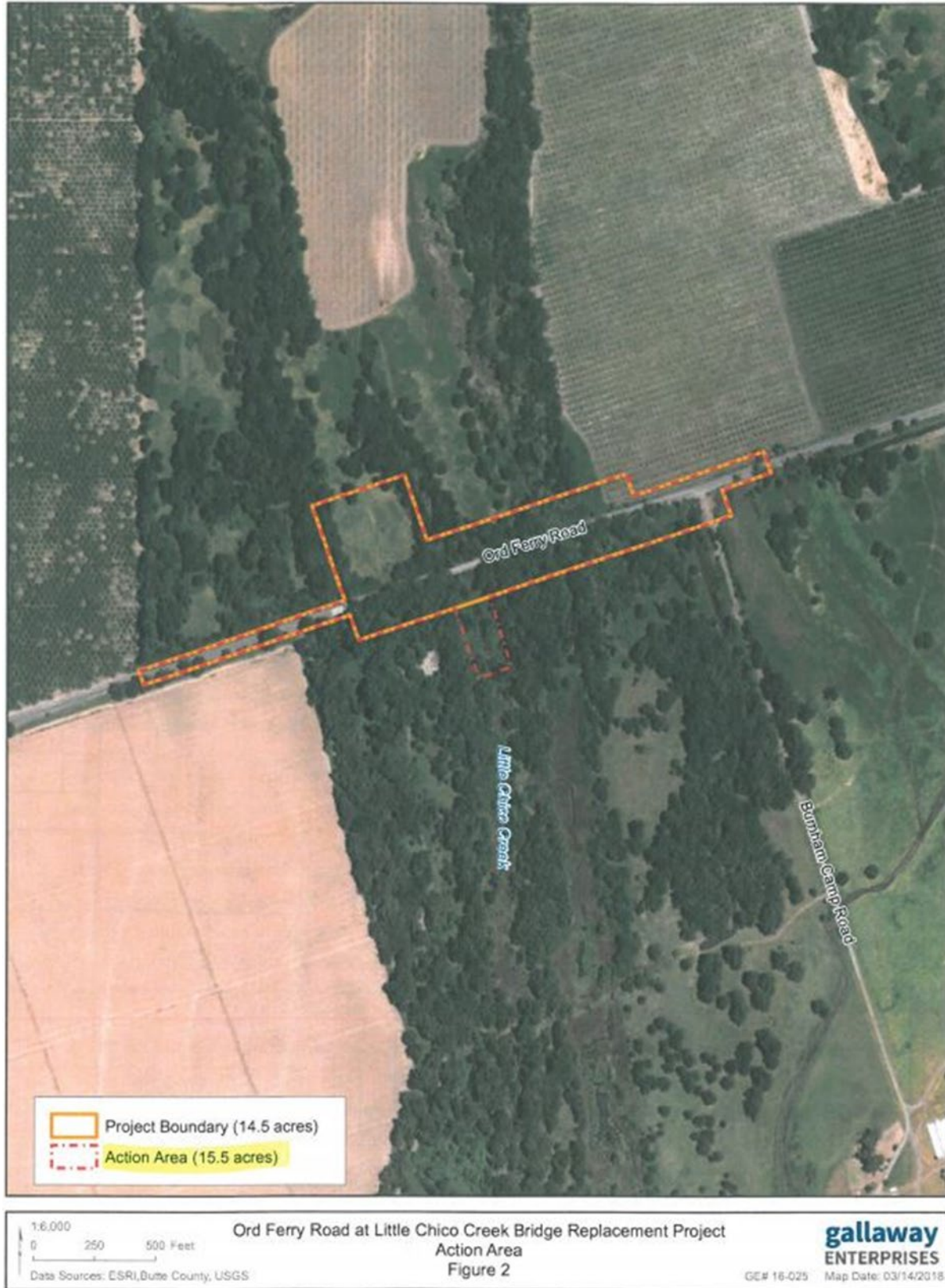


Figure 1: Action Area

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 Listed Species and Critical Habitat in the Action Area

The action area, which encompasses Little Chico Creek and associated floodplains and riparian areas at and adjacent to the Project work area, functions primarily as a rearing and migratory habitat for CCV steelhead.

Although the action area is not designated critical habitat for CV spring-run Chinook salmon, due to the life history timing of CV spring-run Chinook salmon it is possible for one or more of the following life stages to be present within the action area throughout the year: adult migrants, rearing juveniles, or emigrating juveniles. Unspecified life stages of CV spring-run Chinook salmon have been observed within portions of Little Chico Creek during high flow years however, this watershed is not typically used as a migration corridor or spawning habitat for adult CV spring-run.

Between late-fall and spring (November 1 – June 30) Little Chico Creek within the action area contains the following PBFs: 1) freshwater migration corridor, and 2) freshwater rearing sites for CCV steelhead. These PBFs within the designated critical habitat that provide adult migration and juvenile refuge, mobility and survival, and are essential to the conservation of CCV steelhead. The essential features of these PBFs include water quality and forage, water quantity and floodplain connectivity, water temperature, riparian habitat, natural cover, and access to and from spawning grounds. The intended conservation roles of habitat in the action area are to provide appropriate freshwater rearing and migration conditions for juveniles and unimpeded freshwater migration conditions for adults. CCV steelhead have been known to spawn miles upstream of the action area in the upper reaches of Little Chico Creek, however there is no spawning potential for either species in the action area (Brown and Mott 2002). During the summer months (July 1 – October 31) the intermittent hydrology, still water, and warm temperatures make Little Chico Creek within the action area unsuitable for any lifestage of anadromous salmonid (T. McReynolds, CDFW, pers. comm., 2018).

The Recovery Plan for the Evolutionary Significant Units of Sacramento River winter-run Chinook salmon and Central Valley spring-run Chinook salmon and the Distinct Population Segment of California Central Valley steelhead (NMFS 2014), herein referred to as “Recovery Plan”) does not designate listed species in Little Chico Creek as belonging to a Core population, meaning listed species in this watershed do not have a high potential to support a viable population with low risk of extinction and are not a priority for recovery actions.

2.4.2 Factors Affecting Listed Species and Critical Habitat in the Action Area

Little Chico Creek is an intermittent tributary within the Sacramento River watershed, which flows north to south below Ord Ferry Bridge within the action area. Physical features of the drainage in the action area include a mud and gravel bottom, sparse vegetation in the low-flow channel, and relatively dense tree canopy above the channel. Once it leaves the action area, Little Chico Creek flows south several miles before entering Angel Slough and eventually feeding into the Sacramento River. In this area the boundaries of the creek are difficult to delineate due to agricultural land use modifying surface drainage patterns. Little Chico Creek splits into a series of smaller channels, many of which are silted in making migration from the Sacramento River to upper reaches of Little Chico Creek difficult in low flow years. Although the upper reaches of Little Chico Creek contain perennial flows, lower reaches from the city of Chico through the agricultural zone are considered intermittent with some portions completely dry in the summer months.

Little Chico Creek has been degraded from its historic condition and many anthropomorphic and naturally occurring factors have led to the decline of anadromous fish in the surrounding ecosystem. Due to urban development in the reach of Little Chico Creek that runs through the city of Chico (upstream of the action area), as well as agricultural development in the lower reach (including the action area) there has been alteration to the natural and historic flows, and temperatures through the action area. Altered flow regimes can influence migratory cues, water quality (including contaminants, dissolved oxygen, and nutrients for primary productivity), sedimentation, and water temperature.

Riparian vegetation provides a large host of ecosystem services and its removal in urban and agricultural areas has diminished habitat value within the action area. Riparian vegetation plays a key role in the conservation value of rearing habitat for all salmonid life stages. It provides shading to lower stream temperatures; increases the recruitment of large woody material into the river, increasing habitat complexity; provides shelter from predators and; enhances the productivity of aquatic macroinvertebrates (Anderson and Sedell 1979, Pusey and Arthington 2003). It has also been shown to directly influence channel morphology and may be directly correlated with improved water quality in aquatic systems (Schlosser and Karr 1981, Dosskey et al. 2010). Surveys done by California State University Chico (Brown and Mott 2002) report the agricultural zone of Little Chico Creek as having an average rating of cover of about 50% (this is expressed as a percentage of ideal cover). This midrange percentage indicates less than ideal quality cover, which affects the ability of fish to take refuge from both terrestrial and aquatic predators, refuge from high flow velocities, as well as refuge from bright sunlight (Vanicek 1993, Moyle 2002).

2.5 Effects of the Action

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

2.5.1 Effects of the Proposed Action to Listed Fish Species

The effects of the proposed action are based on best available life history information and monitoring data on the two species for which geographical range occurs in the action area. Life stages of species that are expected to be present during the proposed in-water work window (May 1 to October 31) include adult and juvenile CCV steelhead and adult CV spring-run. In this section of Little Chico Creek where the proposed action will occur, there are no known spawning areas for salmonids, so impacts or mortality to eggs are not expected to occur. The following analysis includes potential sources of take for the species resulting from the proposed action, as well as the likelihood of those sources contributing to overall take associated with the proposed action.

Fish Capture and Relocation

To minimize direct and indirect mortality of fishes from construction activities, any fish within the immediate work site will be relocated before the installation of temporary diversions. A full description of fish relocation procedures are described above in Proposed Federal Action section. Fish relocation activities pose a risk of injury or mortality to rearing juvenile CCV steelhead since any fish relocation or collection gear has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish relocation varies widely depending on the method used, ambient conditions, and the experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following NMFS guidelines, direct effects to and mortality of juvenile CCV steelhead during relocation activities is expected to be minimal.

Sites selected for relocating fish will have similar water temperature and provide similar suitable habitat as that of the capture site. However, relocated fish may endure short-term stress from crowding at the relocation site. Relocated fish may also have to compete with resident fish for available resources such as food and habitat. Some of the fish released at the relocation site will likely move upstream or downstream to areas that have more habitat and a lower density of fish. As each fish disperses, competition diminishes and remains localized in a small area. The number of fish affected by competition cannot be accurately estimated, due to variability in fish presence or absence in any given area, but it is unlikely that this impact will cascade through the population within the watershed based on the small area that will be affected and the small number of CCV steelhead and CV spring-run that would need to be relocated.

Juvenile CCV steelhead that evade capture and remain in the construction area may be injured or killed from construction activities. This includes desiccation if fish remain in the dewatered area, or death if fish are crushed by personnel or equipment. However, because experienced biologists will be collecting fish, most are expected to be removed from the area before construction. Juvenile CCV steelhead or adult CV spring-run may be present during relocation, and thus subject to the above effects. Adult CCV steelhead are not expected to be present during relocation, and thus impacts to this life stage of these species is considered improbable.

Increased Sedimentation and Turbidity

Increased sedimentation and turbidity in Little Chico Creek may result from a number of sources associated with the proposed Project. Site clearing, earthwork, vegetation removal and planting, and removal of bridge piers and substructure within the OHWM will result in disturbance of soil

and riverbed sediments and therefore temporary increases in turbidity and suspended sediments. Disturbance of sediments during in-water construction could lead to a degradation of water quality. In addition, installation of water diversion structures could result in temporary increases in turbidity and suspended sediments in the river, if water from within cofferdams is not properly disposed of or contained and treated before discharge back to the river.

Increased exposure to elevated levels of suspended sediments have the potential to result in physiological and behavioral effects. The severity of these effects depends on the extent of the disturbance, 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. 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). 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).

Any increase in turbidity associated with proposed instream work is likely to be brief and localized, 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).

Potential direct and indirect effects of increased sedimentation and turbidity will be minimized through implementation of proposed BMPs. All in water work will be conducted between May 1 and October 31 when flows are anticipated to be low, to minimize impacts to fish. To prevent turbidity, water pumped from dewatered areas will not be discharged back into Little Chico Creek and a sediment filter/sock will be used to further filter water before discharge. A silt screen will be in place prior to any instream construction and an erosion control plan will be in place.

There is still some potential for impacts to adult and juvenile fish due to temporary, localized plumes of turbidity during these processes. However, BMP actions will minimize the extent of adverse effects associated with the proposed action and impacts to fish are expected to be minimal.

Spills and Hazardous Materials

The proposed action will involve heavy construction equipment and activities that could impair water quality if a spill were to occur. Potential sources of pollutants include petroleum products such as fuel, hydraulic fluid, and petroleum-based lubricants. BMPs, an SPP and SWPPP will be in place, and avoidance and minimization techniques will be implemented, minimizing the probability of pollutant incursion into Little Chico Creek. However, unlike sedimentation and turbidity-related effects, potential pollution-related effects have the potential to be persistent in the action area and may affect multiple species and life stages if they were to occur.

Incursion of contaminants into the action area has the potential to directly or indirectly effect species present during or post-construction. Heavy equipment will be present in the action area

and metals may be deposited through their use and operation (Paul and Meyer 2001). These materials have been shown to alter juvenile salmonid behavior through disruptions to various physiological mechanisms including sensory disruption, endocrine disruption, neurological dysfunction and metabolic disruption (Scott and Sloman 2004). Oil-based products used in combustion engines are known to contain polycyclic aromatic hydrocarbons (PAHs), which have been known to bio-accumulate in other fish taxa such as *Pleuronectiformes* and have carcinogenic, mutagenic and cytotoxic effects (Johnson et al. 2002). The exact toxicological effects of PAHs in salmonids is not well understood, although studies have shown that increased exposure of salmonids to PAHs reduced immunosuppression, increasing their susceptibility to pathogens (Arkoosh et al. 1998). Adult and juvenile CCV steelhead and adult CV spring-run may be present in the action area during construction activities and would potentially be acutely injured by a pollution event if one occurred. They could also be indirectly affected by a pollution event if contaminants were to settle within substrate in the active channel that may become disturbed at a later time.

BMPs and avoidance and minimization measures are described in Section 1.4 and will aid in minimizing or avoiding potential direct or indirect adverse effects to listed fish species. With these avoidance and minimization measures in place, potential direct or indirect adverse effects resulting from the incursion of contaminants into Little Chico Creek are not expected to occur.

Construction Related Effects

Construction-related activities have the potential to result in injury or death to listed fish species. Construction-related effects may include debris falling into the active channel, tools and/or equipment falling into the active channel, or noise generated by displaced rock and sediment and the operation of construction machinery. Both adult and juvenile life stages of CCV steelhead and CV spring-run can potentially utilize the action area as a migration corridor and may exhibit rearing behavior there as well. Any of these species/life stages may be present during the scheduled in-water work window and may be adversely affected by construction-related effects. BMPs, and avoidance and minimization techniques will be implemented, minimizing the probability and severity of construction-related effects in the action area.

Juvenile or adult CCV steelhead and CV spring-run that migrate through the Project area may be exposed to short-term noise and disturbance caused by construction activities. For juveniles this may cause stress from being displaced from their rearing area and needing to locate a new rearing area. As such, juvenile CCV steelhead may experience crowding and competition with resident fish for food and habitat, which can lead to reduced growth. Further, juvenile CCV steelhead may be subject to increased predation risk while they are locating to new rearing areas, leading to reduced survival.

However, we expect displaced adult and juvenile fish will likely relocate to areas downstream that have suitable habitat and low competition. A small number of listed species are likely to be present in the action area and temporarily displaced by the proposed Project actions. However, it is not expected that these actions will negatively impact the survival or recovery of the populations as a whole.

Instream construction activities may cause mortality or reduce abundance of benthic aquatic macroinvertebrates within the footprint of the bridge repairs, due to coarse sediment smothering. These effects to aquatic macroinvertebrates are expected to be temporary, as rapid recolonization (about 2 weeks to 2 months) is expected (Merz and Chan 2005). Furthermore, downstream drift is expected to temporarily benefit any downstream, drift-feeding organisms, including juvenile listed species. The amount of food available for adult and juvenile CCV steelhead and CV spring-run in the action area is therefore expected to return to at least to pre-Project conditions.

Although CCV steelhead and CV spring-run may be exposed to the construction area with reduced prey base, individuals will be able to retreat to adjacent suitable habitat, and affected food resources are expected to begin to recolonize as soon as construction is completed. Therefore, effects of instream construction activities are expected to be minor and are unlikely to result in injury or death.

Hydroacoustic Impacts

Construction of the new bridge will require pile driving for temporary and permanent piles. When piles are driven into riverbed substrate, sound propagates through the water that can kill, injure, or disturb fish. The most common form of acute injury to fish resulting from impact pile driving is barotrauma to the fish's swim bladder. When sound propagates through the water, tissues of the swim bladder may become ruptured or torn as the sound wave passes through the fish and pressure levels rapidly rise and fall, causing the swim bladder to expand and contract. Internal organs adjacent to the swim bladder may be injured as well (Gaspin 1975). Salmonids have physostomous swim bladders that may become injured in this way. Other injuries have been documented as well including structural damage to auditory organs (Enger 1981, Hastings 1995, Hastings 1996) causing equilibrium problems (Hastings 1995, Hastings 1996). The fitness of salmonids may be reduced if they experience these injuries as their behaviors for swimming, predator avoidance, feeding, and migrating may become temporarily or permanently impaired.

Impact pile driving will be required for installation of CISS pile shafts for the bridge abutments as well as the temporary falsework. In-channel work will occur July 1-October 31 when flows and water temperatures are unlikely to be suitable for any life stage of salmonid. Any pile driving in the remainder of the work season (May 1 – June 30) when fish have a potential to be present will be on land a minimum of 10 meters from Little Chico Creek and move in an easterly direction away from the creek. Therefore, hydroacoustic effects to listed species are expected to be unlikely.

2.5.2 Effects of the Proposed Action to Critical Habitat PBFs

Critical habitat has been designated in the action area for CCV steelhead. The following analysis includes potential effects to critical habitat PBFs resulting from the proposed action. The PBFs of critical habitat within the action area for CCV steelhead are (1) freshwater rearing sites; and (2) freshwater migration corridors.

Migratory corridor PBFs for CCV steelhead are likely to be affected by the proposed action. In-stream work is expected to temporarily affect a 700 foot length of critical habitat. Impacts are expected to include minor decreases in the flow regime and slight increases in temperatures. During the two separate seasons of in-water work, the width of the channel within the migratory

corridor will be decreased, but the long-term Project footprint is expected to result in an increase of 31ft² of usable area for fish migration and rearing as existing in-stream piers will be removed and replaced with smaller piers.

The wider new bridge will shade Little Chico Creek by a total of 0.06 of an acre, a 0.03 acre increase from the existing bridge structure. This will degrade the PBF of migratory corridors by increasing the predation risk. Overwater structures can alter underwater light conditions and provide potential holding conditions for juvenile and adult fish, including species that prey on juvenile listed fishes.

Water quality may be temporarily affected due to increased turbidity during removal of bridge piers and during dewatering which could cause a temporary drop in oxygen levels. This will affect the migratory PBF component for adequate flow. These effects as well as construction debris, runoff, and dust affecting water quality, will be prevented through the implementation of aforementioned BMPs and spill prevention measures and an emergency response plan. These BMP actions will minimize the extent of adverse effects associated with the proposed action and impacts to critical habitat are expected to be minimal and temporary.

In addition, this Project will remove 37 trees in the Little Chico Creek floodplain, some of which will be within riparian habitat that supports rearing PBFs of critical habitat. BMPs will be implemented to minimize temporary effects; all disturbed areas will be returned to pre-project conditions within one year following completion of construction. These areas will be protected from washout using appropriate erosion control devices, hydroseeding, and revegetation. Trees will be replanted on-site and in-kind at a 3:1 ratio, so impacts to critical habitat due to riparian removal are expected to be temporary.

2.6 Cumulative Effects

“Cumulative effects” are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area’s future environmental conditions caused by global climate change that are properly part of the environmental baseline vs. cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.4).

2.6.1 Agricultural Practice

Agricultural practices in the action area may adversely affect riparian and wetland habitats through upland modifications of the watershed that lead to increased siltation or reductions in water flow. Water diversions are present in the watershed, Depending on the size, location, and

season of operation any diversions which are unscreened may entrain and kill many life stages of aquatic species, including juvenile listed anadromous fish 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 that 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.

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 rock revetment projects carried out by state or local agencies do not require Federal permits. These types of actions and illegal placement of RSP occur within the Little Chico Creek watershed. Most of the levees have roads on top of the levees, which are either maintained by the county, reclamation district, owner, or by the state. Landowners may utilize roads at the top of the levees to access part of their agricultural land. The effects of such actions result in continued fragmentation of existing high-quality habitat, and conversion of complex nearshore aquatic to simplified habitats that affect salmonids in ways similar to the adverse effects associated with this project.

2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminishes the value of designated or proposed critical habitat for the conservation of the species.

2.7.1 Status of the CCV Steelhead DPS

The 2016 status review (NMFS 2016b) concluded that overall, the status of CCV steelhead appears to have changed little since the 2011 status review when the Technical Recovery Team concluded that the DPS should remain listed as threatened. Further, there is still a general lack of data on the status of wild populations. There are some encouraging signs, as several hatcheries in the Central Valley have experienced increased returns of CCV steelhead over the last few years. There has also been a slight increase in the percentage of wild CCV steelhead in salvage at the south 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 CCV steelhead populations in the Central Valley, though at much reduced levels from the 1950s and 1960s. Restoration efforts in Clear Creek continue to benefit CCV steelhead. However, the catch of unmarked (wild) CCV steelhead at Chipps Island is still less than 5 percent of the total smolt catch, which indicates that natural production of CCV 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.

2.7.2 Status of the CV Spring-Run Chinook Salmon ESU

In the 2016 status review, NMFS found, with a few exceptions, CV spring-run Chinook salmon populations have increased through 2014 returns since the last status review (2010/2011), which moved the Mill and Deer creek populations from the high extinction risk category, to moderate, and Butte Creek remaining in the low risk of extinction category. Additionally, the Battle Creek and Clear Creek populations continued to show stable or increasing numbers in that period, putting them at moderate risk of extinction based on abundance. Overall, the Southwest Fisheries Science Center concluded in their viability report that the status of CV spring-run Chinook salmon (through 2014) had probably improved since the 2010/2011 status review and that the ESU's extinction risk may have decreased. However, the 2015 returning fish were extremely low (1,488), with additional pre-spawn mortality reaching record lows. More recent 2017 returns were even lower (2,087 total). Since the effects of the severe drought that impacted California from 2012 to 2015 have not been fully realized, NMFS anticipates at least several more years of very low returns, which may result in severe rates of decline (NMFS 2016a).

2.7.3 Cumulative Effects

Agricultural land use, water diversions, increased urbanization, and continuing rock revetment can be reasonably assumed to occur in the future in the action area. The effects of these actions result in the continued degradation, simplification, and fragmentation of the riparian and freshwater habitat. Some of these actions, particularly those that 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.

2.7.4 Summary of the Effects of the Proposed Action

CCV steelhead and CV spring-run may be harassed, injured, or killed during completion of the proposed action through various pathways. Direct effects from Project activities are expected to result in negative effects through behavioral responses, or prey items killed from sediment or pollutant buildup. Any spills or leaks of toxic substances from construction equipment are expected to cause direct or indirect effects to fish that may result in mortality or reduce the overall health and survival of exposed fish. Construction-related increases in sedimentation and siltation above background levels are expected to affect fish species and their habitat by reducing the survival of juveniles or interfering with feeding, migrating, and rearing activities. Avoidance and mitigation measures, as well as BMPs, will be in place to minimize negative effects to listed species. The implementation of the capture and relocation plan is also expected to increase risks to fish, and may result in a small number injuries and death.

Critical habitat has been designated in the action area for CCV steelhead. The proposed construction will temporarily decrease the action area's ability to safely support CCV steelhead at a variety of life stages and will increase the risk of mortality events or behavioral changes. The removal of 37 trees will temporarily decrease the riparian habitat value within the action area, however mitigation onsite and in-kind at a 3:1 ratio ensures these effects are temporary and minimal. A total of 0.06 acre of critical habitat will be permanently affected in shading from the bridge. The rearing and migratory corridor PBFs that support CCV steelhead will be negatively impacted through bridge shading. These permanent impacts only represent a small loss in the scope of the available habitat for CCV steelhead, but the intrinsic value of the area for the conservation of fish remains high.

2.7.5 Summary

According to the most recent status reviews, CCV steelhead and CV spring-run are at some level of threat or risk of extinction due to past and present activities within the greater Sacramento River watershed that have caused significant habitat loss, degradation, and fragmentation. Cumulative effects like water diversions, increased urbanization, and continuing RSP (rip rap) projects will all continue to happen in the action area without necessarily requiring Federal permitting. During this proposed Project, fish are expected to be harassed, injured, or killed during completion of the proposed action through various pathways. Construction related effects from the Project as well as pollution events, dewatering and fish capture and relocation, turbidity increases, and increased shading all have the potential to affect fish. Avoidance and mitigation measures, as well as BMPs, have been put in place and will be implemented to reduce any negative effects to listed species.

Onsite mitigation will minimize the loss of ecosystem function due to the modification of the riverbank and streambed. Measures are included in the proposed action to protect fish and designated critical habitat.

Although there are temporary and permanent impacts expected to result from the Project, when added to the environmental baseline and cumulative effects, the impacts from the Project in the action area are expected to be minor, and in some cases will occur during seasons when fish abundance is low as a result of lower stream flows and increased temperatures.

2.8 Conclusion

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

2.9 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt

to engage in any such conduct. “Harm” is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). “Incidental take” is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

2.9.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take of CV spring-run and CCV steelhead is reasonably certain to occur in each of the two work seasons of the Ord Ferry Little Chico Creek Bridge Replacement Project. Specifically, NMFS anticipates that juvenile and adult CCV steelhead; and adult CV spring-run may be killed, injured, harassed, or harmed as a result of Project implementation as they have the potential to be present during the work window. Take is expected to occur in the form of injury, death, and harm resulting from dewatering activities and the permanent effects of shading to aquatic habitat.

It is impossible to precisely quantify and track the amount or number of individuals that are expected to be incidentally taken (injure, harm, kill, etc.) as a result of the proposed action due to the variability and uncertainty associated with the response of CCV steelhead or CV spring-run to the effects of the proposed action, the varying population size, annual variations in the timing of spawning and migration, individual habitat use within the action area, and difficulty in observing injured or dead fish. However, it is possible to estimate the extent of incidental take by designating as ecological surrogates, those elements of the Project that are expected to result in incidental take, that are more predictable and/or measurable, with the ability to monitor those surrogates to determine the extent of take that is occurring.

Ecological surrogates are Project elements that are expected to result in take and are predictable and/or measurable. Ecological surrogates can be monitored to approximate the level of take that occurs. Ecological surrogates for construction effects are described below. Overall, the number of listed fish incidentally taken during activities is expected to be small, due to BMPs such as conducting construction activities during the proposed work window when the likelihood of listed species presence is lower.

- 1) Fish Entrapment: NMFS anticipates take in the form of capture, handling, injury, and death to juvenile CCV steelhead and CV spring-run from construction of water diversion, dewatering, fish capture and relocation, and culvert installation for the fill of the access road. The total wetted area anticipated to be affected by the access road is 0.35 acres from May 1 – October 31 for each of the two work seasons; diversions will be removed between seasons. The size of the dewatered section is the ecological surrogate for these effects because it is where capture and relocation or dewatering will directly affect CCV steelhead and CV spring-run. If Caltrans exceeds the 0.35 acre access road footprint, the proposed Project will be considered to have exceeded anticipated take levels, thus

requiring Caltrans to cease operations and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.

- 2) **Downstream Effects:** Water quality is also expected to be temporarily affected over the 700 foot length of stream in the action area due to increased turbidity during removal of bridge piers and during dewatering which could cause a temporary drop in dissolved oxygen levels. These water quality effects are expected to cause harm to juvenile and adult CCV steelhead and CV spring-run in the form of reduced fitness. This 700 foot area is the ecological surrogate for downstream impacts because it is where increased turbidity and reduced water quality will indirectly affect fish. If Caltrans exceeds the 700 foot length of stream, the proposed Project will be considered to have exceeded anticipated take levels, thus requiring Caltrans to cease operations and coordinate with NMFS within 24 hours on ways to reduce the amount of take down to anticipated levels.
- 3) **Overwater Structure Impacts:** NMFS anticipates that CCV steelhead and CV spring-run will be harmed as a result of shading by the new structure over the Little Chico Creek. This shading is expected to reduce the primary productivity of affected habitats and increase the number of predatory fishes holding in the action area and/or their ability to prey. The ecological surrogate for incidental take associated with the action is the permanent shading of 0.06 acres of Little Chico Creek in the action area, which is appropriate because it is where shading will directly affect CCV steelhead.

Anticipated incidental take will be exceeded if: (1) the ecological surrogates described in the sections above continue to be exceeded after additional measures (in coordination with NMFS) have been taken; (2) the Proposed Action is not implemented as described in the prepared BA; (3) all conservation measures are not implemented as described in the BA (including successful completion of monitoring and reporting criteria); or (4) the Action is not implemented in compliance with the terms and conditions of this incidental take statement.

2.9.2 Effect of the Take

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

2.10 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 continue to work cooperatively with other State and Federal agencies, private landowners, governments, and local watershed groups to identify opportunities for cooperative analysis and funding to support salmonid habitat restoration

projects within the Sacramento River Basin. Implementation of future restoration projects is consistent with agency requirements set forth in section 7(a)(1).

- 2) Caltrans should limit the amount of RSP used for bank and in-stream protection in the Central Valley to the minimum amount needed for erosion and scour. Engineering plans shall be provided to the contractors that clearly show the amount of RSP to be placed at the Project site. Limitation of RSP in design considerations is consistent with agency requirements set forth in section 7(a)(1).
- 3) Caltrans should consider using alternative methods to traditional RSP for bridge projects and incorporating geotextiles for bank erosion control and prevention. Bioengineered products are available on the market and can be used to protect areas against erosive forces along shorelines and is an alternative to using riprap. Implementation of RSP alternatives in design considerations is consistent with agency requirements set forth in section 7(a)(1).

2.10.1 Reasonable and Prudent Measures

“Reasonable and prudent measures” are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

- 1) Fish rescue operations will be conducted according to the specifications provided to NMFS and the NMFS-approved supervising biologist(s) will oversee all aspects of dewatering and fish handling operations.
- 2) Caltrans shall report any incidence of take to NMFS within 24 hours.
- 3) Caltrans shall provide a report of project activities to NMFS by December 31 of each construction year.

2.10.2 Terms and Conditions

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

- 1) The following terms and conditions implement reasonable and prudent measure 1:
 - a. All aspects of fish rescue operations shall be supervised by at least one NMFS-approved biologist who will be personally on site throughout each phase of the rescue operation.
 - b. A written plan for a fish rescue operation specific to this project shall be provided to NMFS for approval 45 days prior to implementation of the project. The plan shall be

thoroughly understood by all individuals that are to be involved and operations shall be conducted in strict accordance with the written plan.

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

- a. Caltrans shall record the date, number, and specific location of all listed fish that are relocated in the dewatering and diversion in addition to any direct mortality observed during in-water work and relocation. If a listed species is observed, injured, or killed by project activities, Caltrans shall contact NMFS within 24 hours at 916-930-3600. Notification shall include species identification, the number of fish, and a description of the action that resulted in take.

3) The following terms and conditions implement reasonable and prudent measure 3:

- a. A report shall include a summary description of in-water construction dates and activities, avoidance and minimization measures taken, and any revegetated areas on-site. Updates and reports required by these terms and conditions shall be submitted by December 31 of each year during the construction period to:

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

2.11 Reinitiation of Consultation

This concludes formal consultation for the Ord Ferry Bridge Replacement Project on Little Chico Creek.

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

3 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 recommendations apply to the proposed action:

- Caltrans should post interpretive signs within the action area describing the presence of listed fish and/or critical habitat 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.

4 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are Caltrans. Other interested users could include contractors, citizens and landowners in the Little Chico Creek watershed, and other stakeholders in Little Chico Creek, California Central Valley steelhead, or Central Valley spring-run Chinook salmon. Individual copies of this opinion were provided to Caltrans. The document will be available through the [NOAA Institutional Repository](#), after approximately two weeks. The format and naming adheres to conventional standards for style.

4.2 Integrity

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

4.3 Objectivity

Information Product Category: Natural Resource Plan

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

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

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

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

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