



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 ECO #: WCR- WCRO-2022-02177

February 7, 2023

Matthew Roberts
Lead Project Manager
California North Section
U.S. Army Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Yuba City Wastewater Treatment Facility Outfall and Diffuser Project

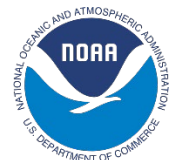
Electronic transmittal only

Dear Mr. Roberts:

This letter responds to your August 26, 2022, request for initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the subject action. Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat.

We reviewed the U.S. Army Corps of Engineers (Corps) consultation request and related initiation package. Where relevant, we have adopted the information and analyses you have provided and/or referenced but only after our independent, science-based evaluation confirmed they meet our regulatory and scientific standards. Specifically, we incorporated by reference the following documents which have been provided by the Corps, the applicant, or the applicant's consultant, in the initiation package that accompanied the original request for consultation, or in the subsequent correspondence with NMFS through electronic mail (email) during the course of the consultation process:

- Project information shared during a pre-application meeting that occurred on September 2, 2021.
- The formal initiation request letter dated August 26, 2022, from Ms. Kaitlyn Pascus (Corps).
- A Biological Assessment (BA) for the Yuba City Wastewater Treatment Facility Outfall and Diffuser Project (Jacobs 2022).



- Email correspondence between NMFS, the Corps, and the consultant Jacobs Engineering Group Inc., clarifying questions on specific details of the proposed action.

Consultation History

- On August 5, 2021, Jacobs Engineering Group Inc. requested technical assistance from NMFS. NMFS attended a meeting on September 2, 2021.
- To assist with writing their BA, Jacobs Engineering Group Inc. requested a species list via email on October 4, 2021, to confirm what species and critical habitat are present in the action area. NMFS provided a species list in an email response on October 6, 2021.
- On August 26, 2022, the Corps requested formal consultation for the Yuba City Wastewater Treatment Facility Outfall and Diffuser Project.
- The information received on August 26, 2022, were considered sufficient to initiate consultation on that date. Upon further in-depth review of the BA, clarifications of the proposed action were requested by NMFS via email correspondence with the Corps and Jacobs Engineering Group Inc. in November 2022. Responses to questions were received via email communications in December 2022 and January 2023.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 FR part 402 in 2019 (“2019 Regulations,” see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court’s July 5 order. As a result, the 2019 regulations are once again in effect, and we are applying the 2019 regulations here. For purposes of this consultation, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

Proposed Federal Action

“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 Corps proposes to issue a Department of the Army permit to Yuba City, the applicant, to carry out the Yuba City Wastewater Treatment Facility Outfall and Diffuser Project (Project).

For the purposes of this consultation, NMFS adopts by reference the complete project description as it is presented in the BA (refer to Section 3 of the BA). In summary, the existing Yuba City wastewater outfall and diffuser, located at Shanghai Falls on the Feather River, has been damaged and therefore needs to be replaced by a new outfall and diffuser, in order to restore the ability to discharge treated effluent directly to the Feather River.

The new outfall pipeline and diffuser within the Feather River would be constructed during a proposed in-water work period from June 1 through November 30. In-water construction is expected to be completed over approximately 100 days beginning in June 2024.

A temporary work trestle will be installed to provide access to the work area in the river channel. The support piles of the temporary trestle would be driven using vibratory methods. Grading and

excavation would occur along the riverbank to allow safe access for construction equipment onto the trestle.

The outfall pipeline trench on the shoreline is anticipated to be excavated to the required depth using either an excavator or clamshell dredge. A small cofferdam will be required for the pipe where it drops below the level of the riverbed. The cofferdam would be constructed with sheet piles, installed with vibratory methods, and may also require impact hammering. The closed excavation would be dewatered using shallow pumping wells. Excavation of the diffuser trench and placement of the new diffuser in the river will occur from the shore into the river from the temporary work trestle on the upstream side of the trench.

The diffuser pipeline trench would be backfilled with granular bedding and native material stockpiled during excavation, and covered with riprap rock material. Angular stone or riprap would provide protection against erosion that could otherwise expose the diffuser pipe. Material from the pipe trench excavation would be added to backfill the upstream portion of the pipeline trench. The native material would restore the bottom of the river and cover the granular backfill materials upstream of the diffuser. Excess riverbank and riverbed material would be distributed on the river bench within the construction disturbance area.

Operations and maintenance would include annual inspections of new diffuser ports, periodic maintenance activities on the new diffuser, levee pipe crossing pressure test or video inspection every 5 years, and periodic maintenance activities on the vacuum pumps and other features of the vacuum siphon system.

ENDANGERED SPECIES ACT

This biological opinion analyzes the effects of the Project on threatened Central Valley (CV) spring-run Chinook salmon (*Oncorhynchus tshawytscha*), threatened California Central Valley (CCV) steelhead (*O. mykiss*), threatened southern Distinct Population Segment (sDPS) of North American green sturgeon (*Acipenser medirostris*, sDPS green sturgeon), and their designated critical habitats, per section 7 of the ESA.

We examined the status of each species that would be adversely affected by the proposed action to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. We also examined the condition of critical habitat throughout the designated area and discuss the function of the physical or biological features (PBFs) essential to the conservation of the species that create the conservation value of that habitat. PBFs are described in their respective recovery plans (NMFS 2014, 2018). NMFS adopts by reference the description of the status of the species and their designated critical habitats that is provided in section 4 of the BA.

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). For the purposes of this consultation, NMFS adopts by reference the description of the action area provided in the BA that was prepared by the applicant's consultant and supplied by the Corps as part of the original initiation package.

The action area includes the project footprint within the Feather River, landside work, a radius of approximately 853 meters to encompass the area of potential noise impacts during installation of piles for the temporary construction trestle and permanent pipe piles for the outfall diffuser structure, and an approximate 3,980-meter radius (approximately 197 acres of riverine habitat) for behavioral impacts from sheet pile impact hammering. The action area includes designated critical habitat for CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon.

Environmental Baseline

The “environmental baseline” refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency’s discretion to modify are part of the environmental baseline (50 CFR 402.02). NMFS adopts by reference the description of the environmental baseline provided in the BA (refer to Section 5.1 of the BA).

The action area is within designated critical habitat for CV spring-run Chinook salmon and CCV steelhead. Habitat requirements for these species are similar. The PBFs of salmonid habitat within the action area include freshwater rearing habitat and freshwater migration corridors. The essential features of these PBFs include adequate substrate, water quality, water quantity, water temperature, water velocity, shelter, food, riparian vegetation, space, and safe passage conditions. 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. The area is outside of spawning habitat for CV spring-run Chinook salmon and CCV steelhead. The conservation condition and function of this habitat in the action area and throughout the Feather River has been severely impaired due to alterations made to the river.

The action area is also within designated critical habitat for sDPS green sturgeon. PBFs for sDPS green sturgeon in the action area include food resources, flow, water quality, migration corridors free of passage impediments, depth (holding pools), and sediment quality. As is the case with salmonids, PBFs in the area have been severely impaired through several anthropogenic factors. The loss of potential upstream habitat from Oroville Dam, altered hydrograph, altered temperature regime, overfishing, poaching, diversions of water, predation, ocean survival, and other factors have greatly impacted the sDPS green sturgeon in the Feather River. The NMFS (2018) Recovery Plan for sDPS green sturgeon identifies altered water temperature from thermal effluent as a specific threat for juvenile and adult sDPS green sturgeon, and lists priorities such as assessing temperature and flow, and possibly modifying operations to maintain suitable water temperatures and flows for spawning and recruitment in the Feather River.

A migratory corridor with adequate flows resulting in unimpeded passage is necessary for access to spawning grounds in the Feather River and other tributaries. Suitable rearing habitat that supports juvenile growth and survival has an overall benefit to the fish populations. Although the aquatic habitat in the action area has been substantially altered and its quality diminished through

years of human actions, its value remains high for the above NMFS-listed species and designated critical habitats.

Effects of the Action

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

The BA provides a detailed discussion and comprehensive assessment of the effects of the proposed action, and is adopted by reference (50 CFR 402.14(h)(3)). NMFS has evaluated the analysis of effects provided by the Corps and the applicant and after our independent, science-based evaluation determined it meets our regulatory and scientific standards. In summary, the Corps proposes to authorize the construction of a new outfall/diffuser in the Feather River and associated work on land. Temporary and long-term effects of this proposed action are:

- Temporary impacts from underwater sound, including behavioral changes, caused by pile driving and other in-water work (up to 197 acres).
- Temporary disturbance to the benthic community from pipe trench work in the river substrate.
- Temporary increases in turbidity during pile-driving activity and construction of the outfall/diffuser in the river.
- Temporary water quality impacts from potential spills or equipment leaks.
- Temporary impacts to fish during dewatering of a 0.03-acre cofferdam.
- Temporary impacts to 0.237 acre of riparian vegetation from an access road and other activities within the project footprint.
- Permanent impacts to 0.018 acres of riparian vegetation from streambank stabilization.
- Permanent impacts to the riverbed from the installation of the new outfall/diffuser structure; approximately 0.069 acres of channel bottom, covered with riprap and native material.
- Permanent water quality impacts at the new diffuser location.

The effects of the proposed action are based on best available life history information and monitoring data on the three species for which ESA designated critical habitat and geographical range occurs in the action area. CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon may be present during the in-water work window of June 1 through November 30. Listed salmonids are least likely to be present in the action area from July 1 to October 31, and sDPS green sturgeon may be present year-round. Construction-related effects will be temporary and may impact a small number of individual fish during the June 1 to November 30 in-water work window, particularly adult and juvenile CCV steelhead from September through November, adult and juvenile sDPS green sturgeon during the months of June to July, and juvenile CV spring-run Chinook salmon which typically outmigrate from October through November, but could be rearing in the action area year-round. Adult CV spring-run Chinook salmon are least likely to be present during the in-water work window.

The majority of pile driving will be done with a vibratory hammer. However, the steel sheet piles may need to be partially driven with an impact hammer if a vibratory hammer is not sufficient. NMFS considers using a vibratory hammer to be less harmful to fish than an impact hammer due to the continuous characteristics of the sound wave produced by a vibratory hammer with lower peak sound pressures (Caltrans 2015). Exposure to continuous sound for prolonged periods of time could harm fish, but to a lesser extent than noise from an impact hammer which creates an impulsive sound source with a high intensity and rapid rise time and is known to injure or kill fish. Impact hammering the steel sheet piles is expected to result in a peak sound pressure of 205 decibels (dB) up to 9 meters from the source, an accumulated sound exposure level (SEL) of 179 dB up to 858 meters from the source, and non-adverse behavioral effects (RMS of 189 dB) up to 3,980 meters from the source. Any listed fish in the action area will be temporarily subjected to these noise levels, which may result in death, injury, or behavioral changes, depending on the proximity to the pile-driving activity. Behavioral effects may cause a startle response and result in fish leaving the area. Other potential changes in behavior in response to underwater sounds include reduced predator awareness and reduced feeding (Voellmy et al. 2014 a,b). Pile driving work will occur during daylight hours only, for up to 10 days.

During construction, listed fish species will be temporarily subjected to elevated turbidity levels in the immediate vicinity and downstream of the pile-driving activity. Adult salmonids and green sturgeon are expected to migrate through the action area during construction during the in-water work window, however, the most suitable migration corridor follows the channel thalweg, which occurs near the riverbank opposite side of the river, where they can better avoid turbidity effects. During and immediately following construction, juvenile fish are expected to have an increased risk in exposure and vulnerability to predators in close proximity to the action area.

In the long-term, NMFS expects that some salmonids and sDPS green sturgeon migrating past the location of the new outfall structure will be exposed to the elevated temperatures in the immediate vicinity of the effluent plume, and that this exposure will result in an adverse effect, causing some of these fish to alter their behaviors and avoid the plume to find more suitable water temperatures. The new diffuser system will be located in a deeper section of the river where dilution performance will be improved. The discharged effluent is expected to result in an acute mixing zone of no more than 35 feet from the outfall, and a chronic mixing zone of no more than 350 feet from the outfall. The treated effluent will be diluted and mixed in the river to lower constituent concentrations below criteria protective of aquatic life and minimize the effects of thermal loading.

The PBFs of the designated critical habitats for CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon that will be affected by the proposed action include freshwater rearing sites, migration corridors, food resources, and water quality. No spawning habitat is present in the action area, therefore no adverse effects to the spawning sites PBF are expected.

Temporary effects to rearing, migration corridor, food resources, and water quality PBFs that are anticipated to occur as a result of construction activities include, noise impacts from pile driving, a temporary increase of suspended solids and turbidity, a temporary reduction in foraging habitat and prey availability due to riverbed disturbance, and temporary effects to riparian vegetation. Permanent effects include removal of a small area of riparian vegetation, and continued degraded water quality of the rearing sites and migratory corridor PBFs for juveniles as treated effluent continues to be discharged to the river.

“Cumulative effects” are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. NMFS adopts by reference the description of cumulative effects provided in the BA (refer to Section 5.2) that was prepared by the applicant’s consultant and supplied by the Corps as part of the original initiation package. In addition to what is in the BA, agricultural activities and other private landowner actions are likely to be ongoing in the action area, as well as ongoing aquaculture and fish hatchery activities. All potential future activities could alter habitat and increase the risk of adversely affecting Federally listed fish species and the designated critical habitats of CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon, and would be cumulative to the effects of the proposed action.

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 to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, to formulate the agency’s biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon use the action area as an upstream and downstream migration corridor, and for rearing. Proposed construction is scheduled to occur during a June 1 to November 30 in-water work window. Listed salmonids are least likely to be present from July 1 to October 31, and sDPS green sturgeon may be present year-round. The numbers of individual listed fish that are present at the time of construction are expected to be low, and impacts to those individuals are not likely to translate into population level effects. Adult and juvenile CCV steelhead, juvenile CV spring-run Chinook salmon, and adult and juvenile sDPS green sturgeon may be present during construction activities. Adult CV spring-run Chinook salmon are not likely to be present during this time.

The action area represents a small proportion of the similar adjacent habitat available for fish. Construction-related stressors (e.g. physical disturbance, noise, and turbidity) will be temporary and are expected to dissipate quickly within the context of the larger surrounding habitat. For listed species that are present, it is anticipated that they will avoid any localized areas of disturbance. Turbidity-related effects to listed species are expected to be temporary and limited to behavioral responses and harm or injury of a few individuals from each of the listed fish species migrating through the action area. Noise-related effects to listed species are expected to be temporary and result in harm, injury, and death of a small number of individuals within the action area during the in-water work window of June 1 to November 30.

The proposed action will result in the temporary disturbance to 197 acres of aquatic habitat, temporary disturbance to 0.237 acres of riparian vegetation, and the permanent loss of approximately 0.069 acres of designated critical habitat for CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon on the channel bottom of the Feather River.

The temporary degradation of the PBFs in the action area during construction, and the permanent degradation due to placement of the outfall structure within the channel bottom, is not appreciable in consideration of the available habitat adjacent to and adjoining the action area for rearing and migration. The permanent discharge of treated effluent into the Feather River is expected to result in long-term degraded water quality within the vicinity and immediately downstream of the discharge point, which will have an ongoing effect to designated critical habitat at the discharge location, however, the affected area is small, and similar habitat exists adjacent to the affected area.

Although there will be temporary and permanent impacts from the Project, when added to the environmental baseline and cumulative effects, the impacts from the Project in the action area are small, and construction activities occur during months when fish abundance is low. Therefore, the Project is not expected to reduce appreciably the likelihood of either the survival and recovery of a listed species by reducing their numbers, reproduction, or distribution; or appreciably diminish the value of designated critical habitats for the conservation of the species.

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

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Harass" is further defined by interim guidance as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

Amount or Extent of Take

In the biological opinion, NMFS determined that the proposed action is reasonably certain to result in the incidental take of individual adult and juvenile CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon. Incidental take in the form of injury, death, harm or harassment is expected to occur during temporary construction activities and from the alteration of habitat conditions in a manner that may significantly disrupt normal behavior. Because of proposed Project timing, and due to the location and small size of the action area in relation to surrounding habitat, actual numbers of fish adversely affected are expected to be low. NMFS does

not anticipate the incidental take of any spawning fish, or eggs, fry, or larval life stages of any of the listed species considered in this biological opinion, since no spawning habitat is present in the action area.

NMFS cannot, using the best available information, precisely quantify and track the amount or number of individuals that are expected to be incidentally taken (injured, killed, harmed, harassed) per species as a result of the proposed action due to the variability and uncertainty associated with the long-term response of listed species to the effects of the proposed action, the varying population size of each species, annual variations in the timing of migration, individual habitat use within the action area, and difficulty in observing harassed, injured, or harmed 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 adverse effects to listed fish species, that are more predictable and/or measurable, with the ability to monitor those surrogates to determine the extent of take that is occurring.

The most appropriate threshold for incidental take is an ecological surrogate of habitat degradation, which includes temporary and permanent degradation of aquatic habitat. The behavioral modifications or fish responses that result from the habitat disturbance are described below. NMFS anticipates annual take will be limited to the following forms:

1. Take in the form of harassment, harm, injury, or death of juvenile CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon, and adult CCV steelhead and sDPS green sturgeon from pile-driving noise during the in-water work window of June 1 to November 30, 2024. The analysis of the effects of the proposed action anticipates that construction activities will result in a temporary disturbance of up to 197 acres. This includes potential noise impacts up to approximately 9 meters due to Peak sound, 858 meters cumulative SEL, and RMS up to 3,980-meters.
2. Take in the form of capture, handling, injury, and death to juvenile CV spring-run Chinook salmon, CCV steelhead, and sDPS green sturgeon from cofferdam construction, dewatering, and fish relocation. The total area to be dewatered will be approximately 0.03 acres. Fish that are relocated are expected to be more susceptible to predation and have reduced survival.
3. Take in the form of harm or injury to juvenile or adult fish as a result of elevated turbidity in the aquatic environment relative to environmental background conditions. Increased turbidity is expected to cause elevated stress levels and disruption of normal habitat use. These temporary responses are linked to decreased growth, survival, and overall reduced fitness.
4. Take in the form of harm to rearing and outmigrating juveniles and migrating adults from the degradation of aquatic habitat from the placement of the permanent outfall/diffuser structure. This will reduce the quantity and quality of approximately 0.069 acres of channel bottom habitat. The permanent placement of the structure will result in long-term discharge to the river. The discharged effluent will result in an acute mixing zone of no more than 35 feet from the outfall, and a chronic mixing zone of no more than 350 feet from the outfall, as described in the BA. This will cause some fish to alter their behaviors and avoid the effluent plume to find more suitable water temperatures, which is expected to result in increased predation and decreased growth and survival.

Incidental take will be exceeded if the amount of habitat disturbance described in the above is exceeded.

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.

Reasonable and Prudent Measures

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

1. Measures shall be taken by the Corps or their permittees to minimize or avoid deleterious impacts of pile driving and other construction-related activities upon listed CV spring-run Chinook salmon, CCV steelhead, or sDPS green sturgeon.
2. Fish relocation operations shall be conducted by an experienced biologist(s) who will oversee all aspects of dewatering and fish handling operations.
3. A NMFS-approved fish screen shall be used at all times when pumping from the river in order to avoid entrainment of a listed fish species.
4. Measures shall be taken to ensure that contractors, construction workers, and all other parties involved with the Project, implement the Project as proposed in the BA and this biological opinion.
5. The Corps shall monitor the impacts of incidental take of listed fish and provide NMFS with a post-construction final report describing Project activities to ensure they did not exceed what was described in the BA and this biological opinion.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. The Corps 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. Steel sheet piles shall be driven to the extent possible using vibratory methods, prior to using an impact hammer, in order to minimize adverse effects to listed fish species within the action area.
 - b. Underwater sound shall be monitored during impact pile driving of the steel sheet piles to ensure that the limit of incidental take does not exceed the values for Peak

and SEL sound from the point of construction activity (section 6, Effects of the Action), in order to limit the extent of harm, injury or death.

- c. If sound levels exceed those provided in the BA and described in this opinion, pile driving shall cease and the Corps shall contact NMFS to discuss additional measures for reducing noise levels.
 - d. Pile-driving activity shall occur during daylight hours only, to ensure listed fish species are allowed upstream and downstream passage at night when they typically migrate (the period from 10 pm to 8 am is the typical time range for the migration of most of the listed species in their juvenile and adult life stages).
 - e. Acoustic monitoring shall be in accordance with the Federal Highway Working Group's (FHWG) [Underwater Noise Monitoring Plan template](#).
 - f. Prior to the final closure of the cofferdam with sheet piles, the enclosed space shall be swept with a seine net or similar equipment that extends from the surface to the deepest portion of the channel along the base of the cofferdam sheet piles and to the water's edge on the shore. Sweeping the enclosed area will move fish out of the enclosed area prior to installing the final sheet piles, and will also reduce the potential exposure of listed fish to the remaining pile-driving activities.
 - g. During any in-water construction activities, the permittee shall visually monitor the waters surrounding the outfall location for the observation of any dead, moribund, or erratically behaving salmonid or sturgeon species near the Project work area. Any observation of such fish shall be immediately reported to NMFS within 24 hours at the email address provided below in Term and Condition 5.c. Any dead fish shall be collected in accordance with Term and Condition 5.d below and held for personnel from the NMFS CCV Office, or NOAA Office of Law Enforcement to retrieve or sent to the address provided.
2. The following terms and conditions implement reasonable and prudent measure 2:
- a. During dewatering activities, a fish biologist with experience handling listed fish species, shall be present on site to make observations, and capture/relocate fish if they become entrapped in the dewatered area.
 - b. Biologists that will be handling, capturing, or relocating ESA-listed fish species will have the following qualifications:
 - o Bachelors of Science degree in biology, ecology, environmental science, or related,
 - o Knowledge of proper handling techniques, and
 - o Experience in field identification and handling/relocating ESA-listed fish species.
 - c. Any captured listed fish species shall be immediately relocated back into the Feather River downstream and away from the construction activity.
 - d. The Corps and their permittee shall incorporate a process for fish recovery and resuscitation during dewatering activity to ensure that relocated fish have regained normal behavior prior to release. Normal behavior shall be considered as normal respiration and ventilation movements, possession of normal equilibrium posture, and reflexive movements to external stimuli. Fish not showing these traits shall be

held in an aerated cooler or similar holding device with recirculated river water and aeration until normal behavior is regained prior to their release.

3. The following term and condition implements reasonable and prudent measure 3:
 - a. During any dewatering activity occurring in the Feather River, NMFS-approved fish screens will be used on all pumps at all times in order to avoid entrainment of a listed fish species. The fish screens should meet the NMFS/CDFW screening criteria of 1.75 mm openings.
4. The following terms and conditions implement reasonable and prudent measure 4:
 - a. The Corps shall provide a copy of this biological opinion and the BA to the contractor, making the primary contractor responsible for implementing all requirements and obligations included in these documents and to educate and inform all other contractors involved in the Project of the requirements of this biological opinion.
 - b. All personnel working onsite should receive worker environmental awareness training before entering the project area. This training should include an overview of the avoidance and minimization measures to be implemented to protect biological resources, the terms and conditions in the NMFS biological opinion, what species may be present and their status, and fines for take of Federally listed species.
5. The following terms and conditions implement reasonable and prudent measure 5:
 - a. The fish monitoring report required in the Conservation Measures (section 3.4.1 of the BA) shall be delivered to NMFS no later than 3 months after construction is completed.
 - b. The turbidity and suspended sediment report required in the Conservation Measures (section 3.4.2 of the BA) shall be delivered to NMFS no later than 6 months after construction is completed.
 - c. The report shall include a summary description of projected and actual start dates, progress, and completion of the Project and verify that take was not exceeded, all avoidance and minimization measures were followed, area of any on-site revegetation, and observation of listed fish species. Updates and reports required by these terms and conditions shall be submitted by December 31 of the construction year:

Electronically to the NMFS CCVO at the following e-mail address:

ccvo.consultationrequests@noaa.gov

- d. Any observations of mortalities or abnormal behavior shall immediately be reported to NMFS within 24 hours. This information shall include species observed, life history stage, location (including GPS coordinates if available), number of fish observed, time of day, as well as any other relevant details that are available. If possible, mortalities shall be collected, frozen, individually labeled

with appropriate information. Any dead specimen(s) should be placed in a cooler with ice and either held for pick up by NMFS personnel or an individual designated by NMFS to do so, or sent to:

NMFS Southwest Fisheries Science Center
Fisheries Ecology Division
110 Shaffer Road
Santa Cruz, California 95060

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. The Corps 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 and sturgeon habitat restoration projects within the Central Valley. Implementation of future restoration projects is consistent with recovery actions described in NMFS' Recovery Plans (NMFS 2014, 2018).
2. The Corps should support and promote aquatic and riparian habitat restoration within the Delta and other watersheds, especially those with listed aquatic species. Practices that avoid or minimize adverse effects to listed species should be encouraged.
3. The Corps should recommend that contractors use biodegradable lubricants and hydraulic fluid in construction machinery. The use of petroleum alternatives can greatly reduce the risk of contaminants such as polycyclic aromatic hydrocarbons (PAHs) or heavy metals directly or indirectly entering the aquatic ecosystem.

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.

Reinitiation of Consultation

Under 50 CFR 402.16(a): "Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action."

NMFS also reviewed the proposed action for potential effects on Pacific salmon essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was conducted 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.

Section 305 (b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH (50 CFR 600.0-5(b)).

EFH designated under the Pacific Coast Salmon FMP may be affected by the proposed action. Additional species that utilize EFH designated under this FMP within the action area include fall-run and late fall-run Chinook salmon. There are no Habitat Areas of Particular Concern (HAPCs) within the action area.

The effects of the proposed action on Pacific salmon EFH will be similar to those discussed in the Effects of the Action section for Chinook salmon. Based on the information provided, NMFS concludes that the proposed action would adversely affect EFH for Federally managed Pacific salmon.

The terms and conditions and conservation recommendations in this biological opinion contain adequate measures to avoid, minimize, or otherwise offset the adverse effects to EFH. Therefore, NMFS has no EFH conservation recommendations to provide.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The biological opinion will be available through NOAA Institutional Repository (<https://repository.library.noaa.gov/>). A complete record of this consultation is on file at the NMFS California Central Valley Office in Sacramento, California.

Please direct questions regarding this letter to Kristin Begun in NMFS' California Central Valley Office at kristin.begun@noaa.gov, or by phone at (916) 996-7249.

Sincerely,

A. Catharine Marcinkevage

Cathy Marcinkevage
Assistant Regional Administrator for
California Central Valley Office

cc: Copy to File No: ARN 151422-WCR2022-SA00041

Electronic copy only:

Mr. Kevin Bradford, City of Yuba City, kbradfor@yubacity.net

Mr. Matthew Franck, Jacobs Engineering, matthew.franck@jacobs.com

REFERENCES

- Caltrans. 2015. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. 532. November 2015. 532 pages.
- Jacobs Engineering Group Inc. (Jacobs). 2022. Biological Assessment for the the Yuba City Wastewater Treatment Facility Outfall and Diffuser Project, Sacramento County, California. 332 pages.
- NMFS. 2014. Recovery Plan for the Evolutionarily 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. California Central Valley Area Office. July 2014.
- NMFS. 2018. Recovery Plan for the Southern Distinct Population Segment of North American Green Sturgeon (*Acipenser medirostris*). National Marine Fisheries Service, Sacramento, California. August 2018.
- Voellmy, I. K., J. Purser, D. Flynn, P. Kennedy, S. D. Simpson, and A. N. Radford. 2014a. Acoustic Noise Reduces Foraging Success in Two Sympatric Fish Species Via Different Mechanisms. *Animal Behavior* 89: 191-198.
- Voellmy, I. K., J. Purser, S. D. Simpson, and A. N. Radford. 2014b. Increased Noise Levels Have Different Impacts on the Anti-Predator Behavior of Two Sympatric Fish Species. *PLoS ONE* 9(7): e102946.