UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

May 31, 2023 **Refer to NMFS No:** WCRO-2023-00456

James Mazza
Chief, Regulatory Division
U.S. Department of the Army
San Francisco District, Corps of Engineers
450 Golden Gate Avenue, 4th Floor
San Francisco, California 94102-3404

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for Humboldt County's Freshwater Park Seasonal Dam Installation Project, near the city of Eureka in Humboldt County, California (Corps File: SPN-2007-00751N)

Dear Mr. Mazza:

Thank you for your letter of April 3, 2023, requesting formal consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for Humboldt County's Freshwater Park Seasonal Dam Installation Project. Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1855(b)) for this action. This letter transmits NMFS' final biological opinion and EFH response for the proposed Humboldt County Freshwater Park Seasonal Dam Installation Project (Project).

The enclosed biological opinion describes NMFS' analysis of effects on threatened Southern Oregon/Northern California Coast (SONCC) coho salmon *(Oncorhynchus kisutch)*, California Coastal (CC) Chinook salmon *(O. tshawytscha)*, and Northern California (NC) steelhead (*O.mykiss*), and their designated critical habitat in accordance with section 7 of the ESA. Based on the best scientific and commercial information available, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, NC steelhead, nor is the project likely to destroy or adversely modify designated critical habitat for these species. NMFS expects the proposed action would result in incidental take of SONCC coho salmon, CC Chinook salmon, and NC steelhead. An incidental take statement with terms and conditions is included with the enclosed biological opinion.

The enclosed EFH consultation was prepared pursuant to section 305(b) of the MSA. The proposed action includes areas identified as EFH for species managed under the Pacific Coast Salmon Fishery Management Plan (FMP). Based on our analysis, NMFS concludes that the project would adversely affect EFH and we have provided one EFH Conservation Recommendation.

Please contact Matt Goldsworthy, Northern California Office, Arcata, via email at Matt.Goldsworthy@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: FRN # 151422WCR2023AR00090

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

Humboldt County's Freshwater Park Seasonal Dam Installation Project,
Humboldt County, California

NMFS Consultation Number: WCRO-2023-00456

Action Agency: United States Army Corps of Engineers, San Francisco District

Table 1. Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Southern Oregon/Northern California Coast (SONCC) coho salmon	Threatened	Yes	No	No
California Coastal (CC) Chinook salmon	Threatened	Yes	No	No
Northern California (NC) steelhead	Threatened	Yes	No	No

Table 2. Essential Fish Habitat and NMFS' Determinations:

Fishery Management Plan With EFH in the Action Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

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

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Date: May 31, 2023

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1 INTRODUCTION

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

1.1 Background

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

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

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at the NMFS Northern California Office in Arcata, California.

1.2 Consultation History

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 CFR 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. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, 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.

On April 3, 2023, NMFS received the United States Army Corps of Engineers (Corps) request for formal ESA consultation, and for EFH consultation, regarding Humboldt County's Freshwater Park Seasonal Dam Installation Project. The Corps anticipated adverse effects to Southern Oregon/Northern California Coast (SONCC) coho salmon, California Coastal (CC) Chinook salmon, Northern California (NC) steelhead, and their designated critical habitats. The Corps determined the Project may adversely affect EFH designated by the Pacific Coast Salmon Fishery Management Plan (FMP).

On April 17, 2023, NMFS requested clarification regarding the date the seasonal dam was proposed to be installed. NMFS received clarification via email regarding the earliest date the seasonal dam could be installed. Formal ESA consultation, as well as consultation for EFH, for the Project was initiated on April 18, 2023, upon receipt of the information requested from the Corps.

1.3 Proposed Federal Action

Under the ESA, "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (see 50 CFR 402.02). Under the MSA, "Federal action" means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (see 50 CFR 600.910).

The Corps proposes to issue a Section 404 Clean Water Act permit that would allow for the installation of a seasonal dam on Freshwater Creek to resume and continue for ten years (2023-2032). Freshwater Park has been owned and operated by the County of Humboldt since 1939. Freshwater Creek meanders through the park, and the park's main attraction during the summer is a swimming area that is created by installing the seasonal dam on Freshwater Creek. The seasonal dam has been installed since the 1920's. The dam facility includes permanent concrete wing walls, sill, retaining walls, removable I-beams, flashboards, gate valve, and an upwelling system that provides water to a fish ladder.

1.3.1 Project Description

Humboldt County (County) proposes to rely on various flow thresholds to evaluate whether or not to install the seasonal dam, and to determine the fill-rate of the recreational pool so that adequate flows are bypassed downstream of the dam. During the installation and filling of the recreational pool/reservoir, the County intends to allow at least 1.5 cubic feet per second (cfs) of stream flow to continue to flow downstream by partially opening the gate-valve. Filling of the pool takes 2-5 days depending on flow levels.

1.3.1.1 Flow Thresholds for Dam Installation and Fill Rate

The seasonal dam will be installed no earlier than June 15th of each season, and the County is proposing to only install the dam if flows in early June are greater than two times that of average low flows during the low-flow period summer months of August and September (or a minimum of 3 cfs required to install the dam). After the flash-boards are in place, a gate valve will be installed and closed between 25%-75%, depending on current Freshwater Creek flows. In order to ensure 50% of the flows are bypassed downstream, the County proposes that if Freshwater Creek is flowing 6-8 cfs, the gate valve would be 50% closed; if flows are 4-6 cfs, the gate valve would be 25% closed; and if flows are over 8 cfs, the gate valve would be 75% closed. The amount of opening on the gate valve is evaluated each year and is dependent on the amount of estimated creek flow prior to dam installation. These measures are intended to ensure that 1.5 cfs continues to flow (bypassed) in Freshwater Creek while the pool fills.

1.3.1.2 Dam Installation Procedure

The area upstream of the dam must first be graded with heavy equipment to allow access for dam construction. The installation of the flashboards and other elements require that cranes and other heavy equipment are onsite. The initial grading process is expected to remove 50-100 cubic

yards (cy) of accumulated sediment from a 2,000 square foot portion of the active channel of Freshwater Creek. This material is used onsite as part of the dam construction process, and excess materials are hauled offsite. Once the site has been graded, the next phase of the process is to install fish exclusion fencing from the work areas, remove fish from the work areas, and then remove accumulated sediments from multiple features of the dam infrastructure (concrete foundation, fish ladder, and gate valve).

In order to connect the dam's fish ladder to Freshwater Creek (downstream of the seasonal dam), County staff will use shovels and hand tools to construct an approximately 20-foot long Access Channel. As material is excavated from the Access Channel, it is placed on either side of the channel to form berms on either side. Once the Access Channel has been constructed, the gate valve is installed. There is a corrugated metal pipe built into the concrete dam foundation. When the dam is not in place, the pipe is covered by a steel cap. A backhoe is used to remove 1-3 cy of sediment in front of and behind the pipe to clear the area for installation of the gate valve. The gate valve is used to control the flow of water through the dam as well as assist in filling up the pool. This activity occurs in the wetted channel after it has been cleared of fish. The final step in the installation process is to install an upwelling unit that draws cold water from the bottom of the pool to bypass downstream of the dam and down the fish ladder.

1.3.1.3 Dam Removal

At the end of the season, the gate-valve will be opened slowly to drain the pool. The gate valve is initially opened about 10% for 24 hours, and then increased to 25% to allow the pool to drain slowly and to prevent instantly releasing a large volume of water. After 48 hours, the gate valve is opened to 50% and eventually 100%. Once the pool is completely drained, the flashboard panels will be removed via the crane in the same manner they were installed. No additional grading will occur. Steel caps are re-installed into the slots within the concrete foundation to prevent the slots from filling in with sediment. Temporary baffles will be removed from the fish ladder and the site will remain inactive until the following season. The County plans to have completed the removal of the dam by September 15 of each year.

1.3.1.4 Minimization Measures

The County proposes to incorporate the following conservation measures to minimize the effects of the project:

- Seasonal dam will only be installed when there are adequate flows within Freshwater Creek and the dam will not be installed if flows are less than 3 cfs.
- Flows downstream of the dam will be at a minimum of 1.5 cfs.
- All in-water work would be completed between June 15th and September 15th.
- Sediment containment BMPs (silt fencing, straw bales, straw wattles, etc.) will be used to minimize the amount of sediment that may reach Freshwater Creek during dam installation and removal activities.
- In-water work will be limited to the area identified at the gate-valve/outflow pipe in order to remove accumulated sediment and to clear pipe of sediment.
- Fish exclusion fencing will be installed immediately upstream and downstream of the gate- valve/outflow pipe.

- Use seining techniques as a first removal method for fish that may be present at the gate-valve/outflow pipe area. Electrofishing will only be used as necessary and as a final removal method. All fish removal/relocation efforts would be conducted by qualified fish biologist(s).
- Prior to removal of the dam, the gate-valve will be opened slowly and in small increments to ensure discharge flows are minimized. This will reduce the potential of erosion/scour downstream as well as reduce the potential of fish stranding.
- The release of Total Petroleum Hydrocarbons (TPH) contaminants or of any other deleterious substances shall be safeguarded against to the greatest extent feasible. If through leaks or spills, contamination does occur, it would be controlled immediately.
- All heavy equipment shall be inspected and cleaned at an off-site location prior to delivery to the work site.
- Equipment parking, maintenance, and fueling shall occur at designated upland staging areas only, with all staging locations spatially isolated from watercourses.
- Spill kits shall be kept on-site through the course of the construction.
- In the event of a spill, the local NMFS and CDFW offices shall be notified and consulted regarding clean-up procedures and to determine whether re-initiation of consultation would be required.

1.3.2 Other Activities

We considered whether or not the proposed action would cause any other activities and determined that it would support the continued recreational use and disturbance within the action area by users of the County's Freshwater Park recreational pool.

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 reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "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 also relies on the regulatory definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02). The designations of critical habitat use the term primary constituent element (PCE) or essential features. The 2016 final rule (81 FR 7414; February 11, 2016) that revised the critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a "destruction or adverse modification" analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The ESA Section 7 implementing regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the final rule revising the definition and adding this term (84 FR 44976, 44977; August 27, 2019), that revision does not change the scope of our analysis, and in this opinion, we use the terms "effects" and "consequences" interchangeably.

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

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species, or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that is likely to be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' "reproduction, numbers, or distribution" for the jeopardy analysis. The opinion also examines the

condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the PBFs that are essential for the conservation of the species.

2.2.1 Species Description and General Life History

2.2.1.1 SONCC Coho Salmon

Coho salmon have a generally simple 3-year life history. The adults typically migrate from the ocean and into bays and estuaries towards their freshwater spawning grounds in late summer and fall, and spawn by mid-winter. Adults die after spawning. The eggs are buried in nests, called redds, in the rivers and streams where the adults spawn. The eggs incubate in the gravel until fish hatch and emerge from the gravel the following spring as fry. These 0+ age fish typically rear in freshwater for about 15 months before migrating to the ocean. The juveniles go through a physiological change during the transition from fresh to salt water called smoltification. Coho salmon smolts typically outmigrate between March and July (Ricker *et al.* 2014). Coho salmon typically rear in the ocean for two growing seasons, returning to their natal streams as 3-year-old fish to renew the cycle.

2.2.1.2 CC Chinook Salmon

CC Chinook salmon are typically fall spawners, returning to bays and estuaries before entering their natal streams in the early fall. The adults tend to spawn in the mainstem or larger tributaries of rivers. As with the other anadromous salmon, the eggs are deposited in redds for incubation. When the 0+ age fish emerge from the gravel in the spring, they typically migrate to saltwater shortly after emergence. Therefore, Chinook salmon typically enter the estuary as smaller fish compared to coho salmon. Chinook salmon are typically present in the stream-estuary ecotone, which is located in the downstream portions of major tributaries to estuaries like Humboldt Bay, from early May to early September, with peak abundance in June/July (Wallace and Allen 2007). Similar to coho salmon, prey resources during out-migration are critical to Chinook salmon survival as they grow and move out to the open ocean.

2.2.1.3 NC Steelhead

Steelhead are the anadromous form of *O. mykiss*, spending time in both fresh and saltwater. Steelhead generally return to freshwater to spawn as 4 or 5-year-old adults. Unlike other Pacific salmonids, steelhead can survive spawning and return to the ocean only to return to spawn in a future year. It is rare for steelhead to survive more than two spawning cycles. Steelhead typically spawn between December and May. Like other Pacific salmonids, the steelhead female deposits her eggs in a redd for incubation. The 0+ age fish emerge from the gravel to begin their freshwater life stage and can rear in their natal stream for 1 to 4 years before migrating to the ocean.

Steelhead have a similar life history as noted above for coho salmon, in the sense that they rear in freshwater for an extended period before migrating to saltwater. As such, they enter the estuary as larger fish (mean size of about 170 to 180 mm or 6.5 to 7.0 inches) and are, therefore, more oriented to deeper water channels. The California Department of Fish and Wildlife (CDFW) data indicate that steelhead smolts generally migrate downstream toward the estuary between March 1 and July 1 each year, although they have been observed as late as September

(Ricker *et al.* 2014). The peak of the outmigration timing varies from year to year within this range, and generally falls between early April and mid-May.

2.2.2 Status of Species and Critical Habitat

In this biological opinion, NMFS assesses four population viability parameters to help us understand the status of each species and their ability to survive and recover. These population viability parameters are: abundance, population productivity, spatial structure, and diversity (McElhaney *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a thorough quantitative sense, NMFS has used existing information, including the Recovery Plan for SONCC Coho Salmon (NMFS 2014) and Coastal Multispecies Recovery Plan (NMFS 2016), to determine the general condition of each population and factors responsible for the current status of each Evolutionarily Significant Unit (ESU). We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.02).

2.2.2.1 Status of SONCC Coho Salmon

SONCC Coho Salmon Abundance and Productivity: Although long-term data on coho salmon abundance are scarce, the available evidence from short-term research and monitoring efforts indicate that spawner abundance has declined since the last status review for populations in this ESU (Williams *et al.* 2016). In fact, 24 of the 31 independent populations in the ESU are at high risk of extinction because they are below or likely below their depensation threshold, which can be thought of as the minimum number of adults needed for survival of a population. No populations are at a low risk of extinction and all core populations are thousands short of the numbers needed for recovery (Williams *et al.* 2016).

SONCC Coho Salmon Spatial Structure and Diversity: The distribution of SONCC coho salmon within the ESU is reduced and fragmented, as evidenced by an increasing number of previously occupied streams from which SONCC coho salmon are now absent (NMFS 2001, Good *et al*. 2005, Williams et al. 2011, Williams et al. 2016). Extant populations can still be found in all major river basins within the ESU (70 FR 37160; June 28, 2005). However, extirpations, loss of brood years, and sharp declines in abundance (in some cases to zero) of SONCC coho salmon in several streams throughout the ESU indicate that the SONCC coho salmon's spatial structure is more fragmented at the population-level than at the ESU scale. The genetic and life history diversity of populations of SONCC coho salmon is likely very low. The SONCC coho salmon ESU is currently considered likely to become endangered within the foreseeable future in all or a significant portion of its range, and there is heightened risk to the persistence of the ESU as Viable Salmonid Population parameters continue to decline and no improvements have been noted since the previous status review (Williams *et al*. 2016).

2.2.2.2 Status of CC Chinook Salmon

CC Chinook Salmon Abundance and Productivity: Low abundance, generally negative trends in abundance, reduced distribution, and profound uncertainty as to risk related to the relative lack of population monitoring in California have contributed to NMFS' conclusion that CC Chinook salmon are likely to become an endangered species within the foreseeable future throughout all or a significant portion of their range. Where monitoring has occurred, Good *et al.* (2005) found that historical and current information indicates that CC Chinook salmon populations are depressed. Uncertainty about abundance and natural productivity, and reduced distribution are

among the risks facing this ESU. Concerns regarding the lack of population-level estimates of abundance, the loss of populations from one diversity stratum[1], as well as poor ocean survival contributed to the conclusion that CC Chinook salmon are likely to become an endangered species in the foreseeable future (Good *et al.* 2005, Williams *et al.* 2011, Williams *et al.* 2016).

CC Chinook Salmon Spatial Structure and Diversity: Williams *et al.* (2011) found that the loss of representation from one diversity stratum, the loss of the spring-run history type in two diversity substrata, and the diminished connectivity between populations in the northern and southern half of the ESU pose a concern regarding viability for this ESU. Based on consideration of this updated information, Williams *et al*. (2016) concluded the extinction risk of the CC Chinook salmon ESU has not changed since the last status review. The genetic and life history diversity of populations of CC Chinook salmon is likely very low and is inadequate to contribute to a viable ESU, given the significant reductions in abundance and distribution.

2.2.2.3 Status of NC Steelhead

NC Steelhead Spatial Structure and Diversity: NC steelhead remain broadly distributed throughout their range, with the exception of habitat upstream of dams on both the Mad River and Eel River, which has reduced the extent of available habitat. Extant summer-run steelhead populations exist in Redwood Creek and the Mad, Eel (Middle Fork, Van Duzen), and Mattole rivers. The abundance of summer-run steelhead was considered "very low" in 1996 (Good *et al.* 2005), indicating that an important component of life history diversity in this DPS is at risk. Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead. However, abundance and productivity in this DPS are of most concern, relative to NC steelhead spatial structure and diversity (Williams *et al*. 2011).

NC Steelhead Abundance and Productivity: With few exceptions, NC steelhead are present wherever streams are accessible to anadromous fish and have sufficient flows. The most recent status review by Williams *et al.* (2016) reports that available information for winter-run and summer-run populations of NC steelhead do not suggest an appreciable increase or decrease in extinction risk since publication of the last viability assessment (Williams *et al.* 2011). Williams *et al.* (2016) found that population abundance was very low relative to historical estimates, and recent trends are downwards in most stocks.

2.2.2.4 Status of Critical Habitats

The condition of SONCC coho salmon, CC Chinook salmon, and NC steelhead critical habitat, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined that currently depressed population conditions are, in part, the result of the following human induced factors affecting critical habitat: logging, agriculture, mining, urbanization, stream channelization, dams, wetland loss, and water withdrawals (including unscreened diversions for irrigation). Impacts of concern include altered stream bank and channel morphology, elevated water temperature, lost spawning and rearing habitat, habitat fragmentation, impaired gravel and wood recruitment from upstream

[1] A diversity stratum is a grouping of populations that share similar genetic features and live in similar ecological conditions.

sources, degraded water quality, lost riparian vegetation, and increased erosion into streams from upland areas (Williams *et al.* 2016, Weitkamp *et al.* 1995). Diversion and storage of river and stream flow has dramatically altered the natural hydrologic cycle in many of the streams within the ESU's and DPS. Altered flow regimes can delay or preclude migration, dewater aquatic habitat, and strand fish in disconnected pools, while unscreened diversions can entrain juvenile fish.

2.2.3 Factors Responsible for the Decline of Species and Critical Habitat

The factors that caused declines of species and degradation of critical habitat include hatchery practices, ocean conditions, habitat loss due to dam building, degradation of freshwater habitats due to a variety of agricultural and forestry practices, water diversions, urbanization, over-fishing, mining, climate change, and severe flood events exacerbated by land use practices (Good *et al*. 2005, Williams *et al.* 2016). Sedimentation and loss of spawning gravels associated with poor forestry practices and road building are particularly chronic problems that can reduce the productivity of salmonid populations. Late 1980s and early 1990s droughts and unfavorable ocean conditions were identified as further likely causes of decreased abundance (Good *et al.* 2005). From 2014 through 2016, drought conditions in California reduced stream flows and increased temperatures, further exacerbating stress and disease. Ocean conditions have been unfavorable in past years due to the El Niño in 2015 and 2016 and other anomalously warm waters in the Gulf of Alaska. Reduced flows can cause increases in water temperature, resulting in increased heat stress to fish and thermal barriers to migration.

Another factor affecting the range wide status of SONCC coho salmon, CC Chinook salmon and NC steelhead, and aquatic habitat at large is climate change. Recent work by the NMFS Science Centers ranked the relative vulnerability of west-coast salmon and steelhead to climate change. In California, listed coho and Chinook salmon are generally at greater risk (high to very high risk) than listed steelhead (moderate to high risk) (Crozier *et al* 2019).
Impacts from global climate change are already occurring in California. For example, average annual air temperatures, heat extremes, and sea level increased in California over the last century (Kadir *et al.* 2013). Snowmelt from the Sierra Nevada has declined (Kadir *et al*. 2013). Although SONCC coho salmon, CC Chinook salmon and NC steelhead are not dependent on snowmelt driven streams, they have likely already experienced some detrimental impacts from climate change through lower and more variable stream flows, warmer stream temperatures, and changes in ocean conditions. California experienced well below average precipitation during the 2012-2016 drought, as well as record high surface air temperatures in 2014 and 2015, and record low snowpack in 2015 (Williams *et al*. 2016). Paleoclimate reconstructions suggest the 2012-2016 drought was the most extreme in the past 500 to 1000 years (Williams *et al.* 2016, Williams *et al*. 2020, Williams *et al.* 2022). Anomalously high surface temperatures substantially amplified annual water deficits during 2012-2016. California entered another period of drought in 2020. These drought periods are now likely part of a larger drought event (Williams *et al.* 2022). This recent long-term drought, as well as the increased incidence and magnitude of wildfires in California, have likely been exacerbated by climate change (Williams *et al.* 2020, Williams et al. 2022, Williams *et al.* 2019).

The threat to SONCC coho salmon, CC Chinook salmon, and NC steelhead from global climate change is expected to increase in the future. Modeling of climate change impacts in California

suggests that average summer air temperatures are expected to continue to increase (Lindley et al. 2007, Moser et al. 2012). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al.* 2004, Moser *et al.* 2012, Kadir *et al.* 2013). Total precipitation in California may decline and the magnitude and frequency of dry years may increase (Lindley *et al.* 2007, Schneider 2007, Moser et al. 2012). Similarly, wildfires are expected to increase in frequency and magnitude (Westerling et al. 2011, Moser *et al.* 2012). Increases in wide year-to- year variation in precipitation amounts (droughts and floods) are projected to occur (Swain *et al*. 2018). Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al.* 2002, Ruggiero *et al.* 2010).

In marine environments, ecosystems and habitats important to juvenile and adult salmonids are likely to experience changes in temperatures, circulation, water chemistry, and food supplies (Brewer and Barry 2008, Feely 2004, Osgood 2008, Turley 2008, Abdul-Aziz *et al.* 2011, Doney *et al.* 2012). Some of these changes, including an increased incidence of marine heat waves, are likely already occurring, and are expected to increase. In fall 2014, and again in 2019, a marine heatwave, known as "The Blob"[2], formed throughout the northeast Pacific Ocean, which greatly affected water temperature and upwelling from the Bering Sea off Alaska, south to the coastline of Mexico. The marine waters in this region of the ocean are utilized by salmonids for foraging as they mature (Beamish 2018). Although the implications of these events on salmonid populations are not fully understood, they are having considerable adverse consequences to the productivity of these ecosystems and presumably contributing to poor marine survival of salmonids.

Overall, climate change is believed to represent a growing threat, and will challenge the resilience of SONCC coho salmon, CC Chinook salmon, and NC steelhead.

2.3 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area for the proposed action includes the footprint of the seasonal dam and recreational pool, as well as 1,500 feet downstream of the seasonal dam where reductions in flow will occur and where stream temperatures will be altered.

2.4 Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are

[2] https://www.fisheries.noaa.gov/feature-story/new-marine-heatwave-emerges-west-coast-resembles-blob

not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

In the action area, the threat to SONCC coho salmon, CC Chinook salmon, and NC steelhead from climate change are likely to be similar to those described above in the Species Status section. For example, the action area is likely to experience increases in average summer air temperatures; more extreme heat waves; and an increased frequency of drought (Lindley *et al.* 2007). In addition to the increased frequency of drought, high intensity rainfall events are also expected to become more common, leading to increased erosion and flooding. In future years and decades, many of these changes are likely to further degrade habitat throughout Humboldt Bay by, for example, reducing streamflow entering the bay during the summer and raising summer water temperatures.

Coho salmon occurring in the action area belong to the Humboldt Bay Tributaries population of SONCC coho salmon, which is currently at a moderate risk of extinction (NMFS 2014). Chinook salmon occurring in the action area belong to the Humboldt Bay Tributaries population of CC Chinook salmon (NMFS 2016), which is well below the number needed to be at a low risk of extinction. NC steelhead in the action area belong to the Humboldt Bay Tributaries population of NC steelhead. All of the listed salmonid populations have the same name and encompass all of the tributaries draining into Humboldt Bay. The spatial extent of these populations indicates that fish born in Freshwater Creek (a Humboldt Bay tributary) may return to Humboldt Bay as adults and spawn in any of the Humboldt Bay tributaries, as the entire network of tributaries draining into the bay constitute one population area.

The highest rated threats identified in the recovery plan for SONCC coho salmon include roads, channelization/diking, and agricultural practices (NMFS 2014). The highest rated threats identified in the recovery plan for CC Chinook salmon include roads/railroads and channel modifications such as levees (NMFS 2016). High priority recovery actions in the SONCC Coho Salmon Recovery Plan and the Coastal Multi-Species Recovery Plan (Chinook salmon) are to increase instream structure; construct off channel habitats and oxbows; remove or set back levees; improve grazing practices; and restore tidally influenced areas (NMFS 2014, 2016).

2.4.1 Status of Listed Species and Critical Habitat in the Action Area

Freshwater Creek is one of the major tributaries draining into Humboldt Bay and is likely to represent about half of the anadromous habitat within the Bay. Counts of adult salmonids, including SONCC coho salmon and CC Chinook salmon, at the Freshwater Creek weir from 1994 through 2014 indicates that both wild populations have declined (Ricker *et al.* 2014). Ricker *et al*. (2014) characterized the decline in CC Chinook salmon in Freshwater Creek as dramatic, and raised concerns over depensatory population effects. Once the augmentation of hatchery reared Chinook salmon ceased in 2004, weir captures declined rapidly into the single digits and ultimately reached an all-time low of no returning adults in 2013 (Ricker *et al.* 2014). Freshwater Creek adult abundance estimates for SONCC coho salmon also indicates that adult escapement has declined, ranging from a high of 1,807 in 2002-03 to a low of 89 in 2009-10 (Moore and Ricker 2012). Information on abundance of winter steelhead in Humboldt Bay is limited, but adult steelhead returning to Freshwater Creek from 2000 to 2014 have ranged from a low of 51 to a high of 432 adults (Ricker *et al.* 2014).

The condition of SONCC coho salmon, CC Chinook salmon, and NC steelhead critical habitat in the action area, specifically its ability to provide for their conservation, is degraded from conditions known to support viable populations. Manipulations to tidelands downstream of the action area via channelization and disconnection of the tidal prism has led to reductions in Freshwater Creek's ability to convey sediment downstream and thus accommodate excess in-channel sediment deposition. These factors also contribute to a higher frequency and magnitude of flooding, where individuals displaced from Freshwater Creek likely become stranded in disconnected pastures.

2.4.2 Previous ESA Section 7 Consultations in the Action Area

NMFS' ESA Section 10(a)(1)(A) research and enhancement permits and research projects in the annual California Department of Fish and Wildlife ESA Section 4(d) rule research program could potentially occur in the reaches within the action area. In general, these activities are closely monitored and require measures to minimize take during the research activities.

2.5 Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action (see 50 CFR 402.02). 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).

NMFS expects juvenile and smolt life stages of SONCC coho salmon, CC Chinook salmon, and NC steelhead to be present in the action area during the work windows and exposed to the effects of the Project. The work windows were identified by the County to avoid the majority of the downstream (smolt) migration, but the June 15 start date does coincide with part of the downstream migration. NMFS expects that there may be two age cohorts of SONCC coho salmon present (0+ and 1+); one cohort of CC Chinook salmon (0+); and at least three cohorts of NC steelhead (0+, 1+, and 2+).

2.5.1 Turbidity

The proposed project will result in temporary and localized increases in turbidity during the installation of the dam. Large areas of the streambed and banks will be graded upstream of the dam and sediment will be excavated from multiple areas, which will contribute fine sediments to the Freshwater Creek as these surfaces get inundated and disturbed by recreational users. Turbidity is likely to occur for a few days after construction is complete and be limited to approximately 1,000 feet of Freshwater Creek. The magnitude of turbidity is expected to be rather low given the dynamics of the pool and dam. The effects of turbidity are not expected to alter the feeding behavior or influence the fitness of any individual SONCC coho salmon, CC Chinook salmon, or NC steelhead.

2.5.2 Delayed Migration

The presence of the dam requires that downstream-migrating smolt life stages must locate and use the fish ladder to navigate past the dam, through the Access Channel, and back into

Freshwater Creek. Navigating through the fish ladder likely requires more time for each individual to complete their migration to Humboldt Bay. Past snorkel surveys of the Freshwater Creek watershed revealed that those individuals residing the Freshwater Park swimming pool were much larger in size than the other surveyed locations in the watershed. It is likely that these larger individuals represent both 0+ aged fish who have grown fast in the pool; and also, a fraction of these larger fish are likely 1+ aged fish who did not migrate downstream and remained in the pool (personal communication, Bob Pagliuco May 1, 2023). Reservoirs are also known to delay or prevent migration (Pelicice *et al.* 2014). NMFS expects that many individual fish attempting to migrate downstream will experience delays in migration; and some of these fish may forego their downstream migration and reside in Freshwater Creek for additional time and in some cases an additional year. Long delays in migration may result in larger juvenile SONCC coho salmon or CC Chinook salmon at ocean entry, but these fish may not rear in the marine environment as long and therefore return to Freshwater Creek to spawn as significantly smaller adult fish as compared to the same aged fish who spent more time in the marine environment.

2.5.3 Predation

Based on the results of monitoring of the fish ladder, it appears that many fish may be residing in the fish ladder for long periods of time. The water flowing down the fish ladder is provided via an upwelling system from the bottom of the pool. The cooler water provided through the fish ladder likely creates optimum conditions for rearing. The large numbers of fish residing in the fish ladder likely creates a predation hotspot for avian, small mammal (raccoon), and other predators (Agostinho *et al.* 2012). The shallow and confined cells of the fish ladder provide for opportunities for predators to kill and injure fish residing in the fish ladder. NMFS expects that avian and small animal predation likely occurs during times that Freshwater Park is closed to visitors (many potential predators, such as raccoon and mink, are nocturnal). NMFS expects approximately one predation episodes per season to occur throughout the ten-year permit term, where all of the fish residing in multiple cells of the fish ladder would be consumed, killed, or injured. Based on monitoring reports from 2010, there was an average of 9.7 fish observed in the fish ladder per day (or 10 individuals). It is likely that 80% of the individuals were juvenile NC steelhead, while the remainder were juvenile SONCC coho salmon (or 8 juvenile NC steelhead and 2 juvenile SONCC coho salmon on average). NMFS expects half of the cells to be predated upon once each year, therefore the annual total of juveniles killed would be 50% of the average number of salmonids residing in the ladder each day, totaling 4 juvenile NC steelhead and 1 juvenile SONCC coho salmon).

2.5.4 Fish Relocation

Data on fish relocation efforts from water diversion activities since 2004 show most average mortality rates are below three percent for salmonids. Therefore, given the measures that would be implemented to avoid and minimize impacts to fish during relocation efforts, NMFS expects no more than three percent of all relocated fish would be subject to potential injury or mortality. While the abundance of SONCC coho salmon, CC Chinook salmon, and NC steelhed may vary significantly between years, NMFS expects as many as 10 juvenile SONCC coho salmon, 1 CC Chinook salmon, and 20 juvenile NC steelhead to be captured and relocated each year. If we apply the three-percent mortality rate (rounded up to the nearest whole number) to the total number of juveniles that we estimate could be relocated, we would expect that no more than one

juvenile SONCC coho salmon, one CC Chinook salmon, and one NC steelhead would be injured or killed during relocation each year.

2.5.5 Effects to Critical Habitat

The components required to install a dam and create a recreational swimming pool require that a large area of the active channel be graded annually with heavy equipment, which prevents the establishment of riparian vegetation and precludes the development of complex habitat features. The installation of the dam itself transforms a low elevation floodplain into a deep reservoir, where water temperatures are able to stratify and provide cool temperatures at the bottom, but warmer temperatures at the surface. The dam, reservoir, and fish ladder delay and prevent migrations that would normally occur in the absence of the dam. Monitoring data from 2010 appears to suggest that most fish become residents in the fish ladder, with very little fluctuation in the numbers of fish observed daily. The migratory and rearing PBF's of critical habitat are being adversely affected by installing the seasonal dam each season. However, as previously discussed, the reservoir appears to be accommodating larger fish and a greater diversity of life history types. The pool may function similar to an off-channel pond during the summer-months, where conditions may support enhanced growth rates for individual fish. Flows are measurably reduced as far downstream as 1,500 feet downstream of the dam while the reservoir pool is filled in June.

2.5.6 Effects of Other Activities

The continued recreational use of the swimming pool/reservoir during those years the dam is installed is expected to routinely disturb SONCC coho salmon, CC Chinook salmon, and NC steelhead individuals rearing in the pool. It is likely that the pool supports 100-200 swimmers on some days, and the foot traffic and recreational use is expected to disturb and dislodge fine sediments and infaunal prey items from the bottom. NMFS expects disturbed individuals to relocate themselves into deeper areas of the pool where they can take advantage of prey items dislodged by recreational users. NMFS does not expect the effects from recreational activities to alter the fitness of any individuals given the large size of the pool/reservoir relative to the rather low numbers of individuals present during most of the work window

2.6 Cumulative Effects

"Cumulative effects" are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation [50 CFR 402.02 and 402.17(a)]. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

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

SONCC coho salmon, CC Chinook salmon, and NC steelhead in the action area are likely to be affected by future, ongoing non-federal activities such as road construction and residential use. Effects in the action area originating from activities upstream of the action area will also contribute to diminished water quality or quantity, such as agriculture, water diversion, and timber harvest. Water diversions contribute to diminished stream flows and warmer water temperatures, while agriculture may increase nutrients and degrade dissolved oxygen or water clarity. The future effects of timber harvest include continued land disturbance, road construction and maintenance, and higher rates of erosion and sedimentation. These activities contribute additional sediments to areas upstream, downstream, and within the action area. The capacity to convey sediment in Freshwater Creek has been diminished by development and disconnection in the tidally inundated areas downstream of the action area, leading to higher rates of sediment deposition in the main channel.

2.7 Integration and Synthesis

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

SONCC coho salmon, CC Chinook salmon, and NC steelhead have declined to a large degree from historic numbers. The small loss of SONCC coho salmon, CC Chinook salmon, and NC steelhead juveniles caused by the Project is not expected to affect future returns. The brief periods of turbidity, reductions in stream flow, and disruptions to migration while the dam is in place are expected to alter the life history traits and phenology of the individuals who reside in the action area. Most of these individuals are expected to experience enhanced growth rates, and in some cases, delay migration downstream. These effects are not expected to influence future adult returns or contribute to population level effects that could affect either of the ESU's or DPS.

The action area and ranges of these species are likely to be subject to higher average summer air temperatures and lower total precipitation levels due to climate change. Although the total precipitation levels may decrease, the average rainfall intensity has increased and is expected to continue to increase in the future. Higher air temperatures would likely warm stream temperatures. Reductions in the amount of precipitation would reduce stream flow levels and estuaries may also experience changes in productivity due to changes in freshwater flows, nutrient cycling, and sediment amounts. For this project, all activities would be completed by 2032 and the likely long-term effects of climate change described above are unlikely to be detected within that time frame. The short-term effects of project construction would have completely elapsed prior to these climate change effects. Overall, the project is unlikely to appreciably reduce the likelihood of survival and recovery of SONCC coho salmon, CC Chinook salmon, and NC steelhead, and the project is unlikely to appreciably diminish the value of designated critical habitat for the conservation of these species.

2.8 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and the cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, NC steelhead, or destroy or adversely modify their designated critical habitats.

2.9 Incidental Take Statement

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

2.9.1 Amount or Extent of Take

NMFS expects the Project to result in the incidental take of small numbers of juvenile SONCC coho salmon, juvenile CC Chinook salmon, and juvenile NC steelhead each year that the dam is installed.

Predation
NMFS expects that one juvenile SONCC coho salmon and four juvenile NC steelhead will be killed each year by predators in the fish ladder (ten-year total of 10 juvenile SONCC coho salmon and 40 juvenile NC steelhead killed).

Relocation
NMFS expects that 10 juvenile SONCC coho salmon, 1 juvenile CC Chinook salmon, and 20 juvenile NC steelhead would be captured and relocated during annual fish relocation efforts, with 1 juvenile SONCC coho salmon, 1 juvenile CC Chinook salmon, and 1 NC steelhead likely to be killed by handling stress (ten-year total of 100 juvenile SONCC coho salmon, 10 juvenile CC Chinook salmon, and 200 juvenile NC steelhead captured and relocated; ten-year total of 10 juvenile SONCC coho salmon, 10 juvenile CC Chinook salmon, and 10 juvenile NC steelhead killed).

Total
Combined, the annual total of mortalities expected is: two juvenile SONCC coho salmon, one juvenile CC Chinook salmon, and five juvenile NC steelhead. Over the ten-year permit term, 20

juvenile SONCC coho salmon, 10 juvenile CC Chinook salmn, and 50 juvenile NC steelhead would expected to be killed.

2.9.2 Effect of the Take

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

2.9.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of SONCC coho salmon, CC Chinook salmon and NC steelhead:

1. Undertake measures to ensure that harm and mortality resulting from fish relocation activities are low.
2. Ensure construction methods, minimization measures, and monitoring are properly implemented during construction.
3. Prepare and submit a post-construction report regarding the effects of fish relocation and construction activities.

2.9.4 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. 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. Qualified biologists with expertise in the areas of anadromous salmonid biology shall conduct fish relocation activities associated with construction. The County will ensure that all biologists working on the Project are qualified to conduct fish relocation in a manner which minimizes all potential risks to salmonids.
    b. Salmonids shall be handled with extreme care and kept in water to the maximum extent possible during rescue activities. All captured fish must be kept in cool, shaded, and aerated water protected from excessive noise, jostling, or overcrowding or potential predators any time they are not in the stream, and fish will not be removed from this water except when released. Captured salmonids will be relocated as soon as possible to an instream location in which suitable habitat conditions are present to allow for adequate survival for transported fish and fish already present. Fish will be distributed between multiple areas if biologists judge that overcrowding may occur in a single area.

c. If any salmonids are found dead or injured, the biologist will contact Matt Goldsworthy at 707-357-1338 or by email Matt.Goldsworthy@noaa.gov as soon as possible. The purpose of the contact is to review the activities resulting in the take and to determine if additional protective measures are required. All salmonid mortalities will be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location, fork length, and be frozen as soon as possible. Frozen samples will be retained by the biologist until specific instructions are provided by NMFS. The biologist may not transfer biological samples to anyone other than the NMFS Northern California Office in Arcata, California without obtaining prior written approval. Any such transfer will be subject to such conditions as NMFS deems appropriate.

2. The following terms and conditions implement reasonable and prudent measure 2:
    a. The County shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the project site during activities described in this opinion.
    b. The County shall contact NMFS within 24 hours of meeting or exceeding take of listed species prior to project completion. Notify Matt Goldsworthy by phone at 707-357-1338 or via email to Matt.Goldsworthy@noaa.gov. This contact acts to review the activities resulting in take and to determine if additional protective measures are required

3. The following terms and conditions implement reasonable and prudent measure 3:
    a. The County shall provide a written report to NMFS by December 31 of each year that summarizes the dam installation and removal efforts and reports on the numbers of SONCC coho salmon, CC Chinook salmon, and NC steelhead captured and relocated. The report will contain information about the flows measured and fill rates used to fill the pool. The report will summarize any observations of predation that are observed.
    b. The County shall submit the annual report, by December 31, to Matt.Goldsworthy@noaa.gov.

2.10 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). NMFS has no conservation recommendations to suggest other than those within the MSA EFH consultation.

2.11 Reinitiation of Consultation

This concludes formal consultation for Humboldt County's Freshwater Park Seasonal Dam Installation Project. 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."

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

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

Habitat Areas of Particular Concern (HAPC) are described in the regulations as subsets of EFH that are identified based on one or more of the following considerations: the importance of the ecological function provided by the habitat; the extent to which the habitat is sensitive to human-induced environmental degradation; whether, and to what extent, development activities are, or will be stressing the habitat type; and the rarity of the habitat type (50 CFR 600.815(a)(8)). Designated HAPC are not afforded any additional regulatory protection under MSA; however, federal projects with potential adverse impacts to HAPC are more carefully scrutinized during the consultation process. The EFH consultation mandate applies to all species managed under a Fishery Management Plan (FMP) that may be present in the action area.

3.1 Essential Fish Habitat Affected by the Project

This analysis is based, in part, on the EFH assessment provided by the Corps and descriptions of EFH for the Pacific Coast Salmon Fishery Management Plan (Pacific Fishery Management Council (PFMC) 2016). The action area has been designated as EFH for Pacific Coast Salmon and is known to support multiple HAPC's (spawning, thermal refugia, and complex channel and floodplain).

3.2 Adverse Effects on Essential Fish Habitat

Most of the adverse effects to EFH for the Pacific Salmon Fishery Management Plan (FMP) were previously described in the ESA portion of this document. The installation of the seasonal dam has adverse effects on EFH and HAPC's for Pacific Coast Salmon.

3.3 Essential Fish Habitat Conservation Recommendations

The County grades a portion of the footprint of the swimming pool/reservoir that is created by the installation of the seasonal dam. As previously discussed, this precludes the development of riparian vegetation and diminishes habitat complexity of the action area.

1. The County should plan for or pursue the addition of a habitat structure within a portion of the swimming pool that would not interfere with construction activities. The habitat structure should be comprised of large and small pieces of wood to provide for structure and complexity that would otherwise be present if not for the annual installation of the dam.

Fully implementing this EFH conservation recommendation would protect EFH and HAPC, by avoiding or minimizing the adverse effects described in section 3.2 above.

3.4 Statutory Response Requirement

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

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

3.5 Supplemental Consultation

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

4 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is the U.S. Army Corps of Engineers. Other interested users could include the California Department of Fish and Wildlife. A copy of this opinion was provided to the Corps. 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 and EFH consultation contain more background on information sources and quality.

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

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

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