Supplemental Environmental Assessment for McCloud River Remote Site Incubator Project and the Remote Captive Broodstock Project

June 14, 2022

1. Introduction

This Supplemental Environmental Assessment (Supplemental EA) is intended to supplement the *Final Environmental Assessment (Final EA) for the Issuance of an Endangered Species Act Section 10(a)(1)(A) Permit to the U.S. Fish And Wildlife Service for Hatchery and Genetic Management Plans associated with Livingston Stone National Fish Hatche*ry (LSNFH 10(a)(1)(A) Permit). The Final EA for the LSNFH 10(a)(1)(A) Permit was issued on September 29, 2017. The National Marine Fisheries Service (NMFS) is proposing to amend the LSNFH 10(a)(1)(A) Permit to include an additional action on the McCloud River using Sacramento River winter-run Chinook salmon eggs from the Livingston Stone National Fish Hatchery (LSNFH) and an action to initiate a Remote Captive Broodstock Project at the University of California, Davis (U.C. Davis). The proposed action expands on the preferred alternative and the Action Area in the Final EA. No other changes to the 10(a)(1)(A) or the Final EA are proposed.

This Supplemental EA is being prepared using the 2020 CEQ NEPA Regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 Fed. Reg. at 43372-73 (§§ 1506.13, 1507.3(a)). This Supplemental EA began on May 31, 2022, and accordingly proceeds under the 2020 regulations.

1.1 Proposed Action

The proposed action amends the LSNFH 10(a)(1)(A) Permit with two separate action components. One action component will establish an additional winter-run Chinook salmon egg incubation and rearing location to (1) spread the risk of adverse impacts to early life stages caused by the ongoing extreme drought; (2) pilot test a Remote Site Incubator (RSI) system; and/or (3) study the growth, survival, and outmigration timing of winter-run Chinook salmon in their historical habitat to inform long-term recovery planning. The second action component of the proposed action will initiate a Remote Captive Broodstock Project to establish a second broodstock population at a second location. The proposed action will be implemented as a collaborative study effort by the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife, in coordination with the Winnemem Wintu Tribe, NMFS, and the U.S. Bureau of Reclamation.

The first action component, the RSI Project, will install an RSI system on the McCloud River at a technically feasible and culturally appropriate location downstream of McCloud Dam. Eyed eggs from LSNFH will be transported to and deployed in the RSI system to complete their incubation. Up to 50,000 eyed eggs will be transported in 2022, although the specific numbers will be determined collaboratively by the USFWS, NMFS and CDFW to ensure that other LSNFH supplementation goals can be met. The eggs will be properly disinfected and free of known pathogens before being transported to and incubated along the McCloud River. Hatched winter-run Chinook salmon will be enumerated and volitionally swim from the RSI system into the McCloud River for in-river rearing and monitoring, collected as fry and juveniles with rotary screw traps (RSTs), and then transported and released into the Sacramento River at an appropriate location decided on by the USFWS, NMFS and CDFW. Trapping efficiency is not known but will be evaluated during the study and it is expected that not all juveniles will be recaptured by the rotary screw traps. Steps will be taken to ensure fish are acclimated to Sacramento River water temperatures prior to release.

The second action component, the Remote Captive Broodstock Project, will establish a new captive broodstock population at a location separate from the LSNFH. In 2014-15, during the previous drought, the fish management agencies decided to re-establish a captive broodstock at LSNFH, where 1,000 fish from each year class are kept in captivity and reared at the hatchery as a potential source of brood fish to augment potentially low adult returns in any given year. This year, the agencies expect significant loss of natural production due to high water temperatures. With both the annual production fish and the captive brood fish being kept at LSNFH, a catastrophic event at that facility, such as power loss, pump failure, or wildfire, combined with no natural production, could lead to a complete loss of the 2022 year-class of winter-run Chinook salmon. To ensure the survival of this year-class of winter-run Chinook salmon, the fish management agencies have determined it is necessary to maintain a remote and separate population of broodstock at a facility other than Livingston Stone National Fish Hatchery. As such, starting in June 2022, the USFWS proposes to transfer approximately 1,400 eyed eggs or fry to U.C. Davis facilities to rear and maintain them until at least the end of March 2023, with the potential of extending that through August 2025.

1.2 Proposed Action Area

The Action Area of the Proposed Action for the Final EA includes LSNFH, located in the upper Sacramento River Basin of Northern California, downstream to the Red Bluff Diversion Dam (RBDD) including tributaries (i.e., Battle Creek). The hatchery is located at the base of Shasta Dam (Keswick Reservoir) on the west side of the Sacramento River, approximately 12 miles upstream of the limit of anadromy at Keswick Dam. This Supplemental EA expands the Action Area to include parts of the McCloud River downstream from McCloud Reservoir to Shasta Reservoir, and the U.C. Davis Center for Aquatic Biology and Aquaculture, in Davis, California.

1.3 Purpose and Need

As provided in the LSNFH 10(a)(1)(A) Permit, the purpose for such a permit is for scientific purposes or to enhance the propagation or survival of the affected species, which is the Sacramento River winter-run Chinook salmon evolutionarily significant unit (ESU) for this permit application. The proposed action builds on the scientific research related to the propagation and survival of winter-run Chinook salmon eggs produced at LSNFH and expands hatchery propagation and broodstock programs to supply eggs for the RSI and a remote captive broodstock population at U.C. Davis. Issuance of an amended ESA Section 10(a)(1)(A) permit is a Federal action subject to analysis for potential environmental impacts under NEPA.

1.4 Background

The Final EA provides details about the LSNFH 10(a)(1)(A) Permit, the status of winter-run Chinook salmon, and the history of winter-run Chinook salmon propagation survival studies at LSNFH and is not repeated here.

2. Alternatives Proposed

Two alternatives are considered in this Supplemental EA: (1) Amend and issue a revised LSNFH 10(a)(1)(A) Permit, and (2) do not amend the permit. The proposed action falls within the scope of the preferred alternative.

2.1 Alternative 1 (Preferred)

Amend the LSNFH 10(a)(1)(A) permit to include two new action components, in an expanded area. One action component is a new project to increase reproductive success of WR in a drought year and to test an RSI system and to study the behavior, growth, and outmigration of winter-run Chinook salmon juveniles in the McCloud River. Hatched winter-run Chinook salmon will be enumerated and volitionally swim from the RSI system into the McCloud River for in-river rearing and monitoring, collected as fry and juveniles with rotary screw traps, and then transported and released into the Sacramento River at the Caldwell Park boat ramp. It is expected that not all juveniles will be recaptured by the rotary screw traps. Steps will be taken to ensure fish are acclimated to Sacramento River water temperatures prior to release. The action does not propose or anticipate any constraints to private land use or operation of hydroelectric facilities on or adjacent to the McCloud River.

The second action component, the Remote Captive Broodstock Project, will establish a second winter-run Chinook salmon broodstock population at the U.C. Davis Center for Aquatic Biology and Aquaculture to ensure the survival of this year-class in the event of a year-class failure in the Sacramento River or at LSNFH. The USFWS, NMFS and CDFW have determined it is necessary to maintain a backup population of broodstock at a facility other than LSNFH. As

such, starting in June 2022, the USFWS proposes to transfer approximately 1,400 eyed eggs or fry to U.C. Davis facilities to rear and maintain them until at least the end of March 2023, with the potential of extending that through August 2025.

2.2 Alternative 2 (No Action)

Under a No-action Alternative, NMFS would not amend the LSNFH 10(a)(1)(A) Permit and LSNFH operations and studies would continue as described under the existing 10(a)(1)(A) Permit and Final EA.

3. Affected Environment

The affected environment is described in detail in the Final EA and has not changed, with the exception of adding the study area of the McCloud River and the U.C. Davis Center for Aquatic Biology and Aquaculture.

4. Environmental Consequences

4.1 Short- and Long-term Effects of Alternative 1 (Preferred Alternative)

The Preferred Alternative would build on *the Broodstock Collection and Mating; Egg Incubation; Juvenile Rearing and Release; and the Research, Monitoring, and Evaluation (RM&E)* components of the LSNFH Section (10)(A)(1)(A) Permit. The effects of the new action components are consistent with the original NEPA analysis and will not change. The Final EA disclosed and evaluated the potential short- and long-term effects of the existing LSNFH Section (10)(A)(1)(A) Permit on water, biological, and socioeconomic resources. We expect the effects of adding the RSI Project and the Remote Captive Broodstock Project will be similar to those of LSNFH's existing programs for onsite broodstock management, egg incubation, juvenile rearing and release. We expect RM&E program effects are likely insignificant because the proposed action is small-scale and minor; it would be governed by similar operational practices and protocols, and experienced LSNFH staff and scientists at U.C. Davis, who are familiar with the handling of endangered salmon, will carry out the action. With the following exceptions described below, the proposed action would not change the environmental consequences described in the Final EA.

4.1.1 Water Resources

Effects on water resources described in the Final EA need no elaboration in this Supplemental EA because the proposed RSI Project will not change the already-described effects on these resources. The Remote Captive Broodstock Project will not have any adverse or beneficial effects on water resources because the U.C. Davis Center for Aquatic Biology and Aquaculture facilities are completely self contained and will not require more water, and the affluent will not change.

4.1.1.1 Hydrology

Effects on hydrology described in the Final EA apply to this Supplemental EA. The proposed RSI Project will not further change the effects on hydrology. The Remote Captive Broodstock Project will not have any adverse or beneficial effects on hydrology because the U.C. Davis Center for Aquatic Biology and Aquaculture facilities are isolated from natural hydrologic processes, are completely self contained, and will not require more water or alter local hydrologic processes.

4.1.1.2 Water Quality

Effects on water quality described in the Final EA apply to this Supplemental EA. The proposed RSI Project will not further change the effects on water quality. The Remote Captive Broodstock Project will not have any adverse or beneficial effects on water quality because the U.C. Davis Center for Aquatic Biology and Aquaculture facilities are completely self contained and will not require more water, and the affluent will not change.

4.1.2 Biological Resources

4.1.2.1 Salmon and Steelhead

Sacramento River winter-run Chinook salmon

The proposed RSI Project would essentially change the disposition, or transfer, of a small proportion of the winter-run eggs collected under an already permitted winter-run Chinook salmon supplementation program at the LSNFH so that they will incubate and hatch in an RSI instead of at LSNFH. As the eggs hatch, emergent fry will enter into the McCloud River where their distribution, growth, and behavior will be observed and monitored. The fry will be collected downstream at rotary screw traps and will then be transported and placed into the Sacramento River to emigrate downstream toward the Pacific Ocean. The practices and effects are consistent with existing elements of the LSNFH RM&E actions. The additional biological effects from the proposed action are likely insignificant because the proposed action is small-scale and minor and trained scientists familiar with handling of endangered salmon and operating RSI systems in California will provide technical and field support to the proposed action. The use of trained and experienced personnel greatly reduces the likelihood of injuring or killing fish, thus reducing the overall level of adverse effects to affected resources.

The Remote Captive Broodstock Project will apply the standards and practices of the LSNFH broodstock program that were analyzed in the Final EA. The final disposition of fish that are part of the captive broodstock project is not known because it will depend on the severity of ongoing drought conditions and the likelihood that naturally-produced fish in the Sacramento River survive summer temperatures and egg incubation. However, the final disposition of these fish will be made collaboratively with the USFWS, NMFS and CDFW and they will be treated in a manner that supports the conservation of the species and that is consistent with other elements of

the LSNFH HGMP and the LSNFH 10(a)(1)(A) Permit. In addition, the facilities at U.C. Davis will be:

- Proficient at rearing multiple small batches of salmon
- Able to receive eggs and/or fry sufficient to produce a captive brood population of 1,000 winter-run Chinook salmon
- Able to periodically consolidate batches of fish
- Able to facilitate marking and tagging of fish, either by on-site staff or by staff from other entities
- Capable, if necessary, of holding and rearing adult fish in a manner consistent with the practices of LSNFH (e.g., separated by sex, differential feeding regimes for males and females, differential photo periods for males and females, etc.)
- Capable of starting operations no later than June 22, 2022

Therefore the effects of adding an additional captive broodstock project to the preferred alternative will be insignificant.

Central Valley spring-run Chinook salmon and California Central Valley Steelhead
Effects described in the Final EA apply to this Supplemental EA. The proposed action will not further change the effects on Central Valley spring-run Chinook salmon and California Central Valley Steelhead because of the small scale of the RSI Project, the self contained nature of the Remote Captive Broodstock Project, and because all actions will be carried out by well trained personnel.

Central Valley fall-run Chinook salmon and Central Valley late-fall Chinook salmon
Effects described in the Final EA apply to this Supplemental EA. The proposed action will not further change the effects on Central Valley fall-run Chinook salmon and Central Valley late-fall Chinook salmon because of the small scale of the RSI Project, the self contained nature of the Remote Captive Broodstock Project, and because all actions will be carried out by well trained personnel.

4.1.2.2 Other Fish Species

Southern Distinct Population Segment of North American Green Sturgeon
Effects described in the Final EA apply to this Supplemental EA. The proposed action will not further change the effects on Southern Distinct Population Segment of North American Green Sturgeon because of the small scale of the RSI Project, the self contained nature of the Remote Captive Broodstock Project, and because all actions will be carried out by well trained personnel.

Pacific Lamprey
Effects described in the Final EA apply to this Supplemental EA. The proposed action will not further change the effects on Pacific Lamprey because of the small scale of the RSI Project, the

self contained nature of the Remote Captive Broodstock Project, and because all actions will be carried out by well trained personnel.

4.1.2.3 Fish-Eating Birds

Effects described in the Final EA apply to this Supplemental EA. The proposed action will not further change the effects on Fish-Eating Birds because of the small scale of the RSI Project, the self contained nature of the Remote Captive Broodstock Project, and because all actions will be carried out by well trained personnel.

4.1.3 Socioeconomics

The proposed RSI Project is a short-term endeavor, is targeted in its implementation, and will be extremely small in scale and carefully controlled. The project will provide short-term employment opportunities for Winnemem Wintu partners. No significant effects on the local human population, employment, or income are expected. The proposed action would not be near local human populations so there are no expected effects on local employment or income. Also, the potential for local land management activities such as timber and road management, recreation, water operations, or power production to adversely impact winter-run during the course of the proposed actions is considered to be unlikely to negligible and therefore the potential impacts of the proposed action on these socioeconomic factors is also considered to be unlikely to negligible. We do expect that some public campgrounds may be closed, but only for the short period of the proposed action from June through September. Because of these considerations, we do not anticipate any significant socioeconomic impacts from the proposed action.

The amended LSNFH Section (10)(a)(1)(A) Permit authorizes the direct take of ESA-listed winter-run Chinook salmon expected from the proposed action. For landowners concerned about the unlikely possibility that their lawful actions will result in additional adverse impacts to winter-run Chinook salmon for which they currently lack ESA take exemption, NMFS would employ the Voluntary Drought Initiative (VDI) and seek to address their interests for regulatory certainty. The VDI was developed by NMFS and CDFW in 2021 to reduce the effects of the drought on salmon, steelhead, and sturgeon populations. The VDI creates the opportunity to establish individual Drought Initiative Agreements (Individual Agreements) among: (1) Landowners or Water Users and NMFS; (2) Landowners or Water Users and CDFW; or (3) Landowners or Water Users and both agencies. The VDI also considers the ESA's section 9 enforcement provisions (and similar provisions under CESA) and provides regulatory certainty for landowners by limiting landowner liability under the ESA. Based on all of these considerations, the potential of the preferred alternative to have an effect on the human environment, employment, and income is expected to be insignificant.

The proposed Remote Captive Broodstock Project is a short-term endeavor, is targeted in its implementation, and will be extremely small in scale and carefully controlled. No significant

effects on the local human population, employment, or income are expected. The proposed action would occur at the U.C. Davis Center for Aquatic Biology and Aquaculture using existing staff and student resources, and there are no expected adverse effects on local employment or income. The Remote Broodstock Project may provide some economic opportunities for university staff or students, so the proposed action may have an beneficial impact on employment and student income for a few individuals. These beneficial effects are likely to be small and therefore insignificant.

Cultural Resources

The Winnemem Wintu Tribe is a State of California recognized Indian tribe with ancestral lands in the McCloud River watershed with cultural interests in the history and future of salmon in the action area. The Redding Rancheria is a Federally recognized Tribe with Pit River, Wintu, and Yana people with similar interests in salmon in the action area. The historical salmon runs in the McCloud River were an important food source and an important part of the Winnemem Wintu's tribal tradition and identity (Du Bois 1935; Yoshiyama and Fisher 2001; Winnemem Wintu 2016a). The Winnemem Wintu consider many locations on the McCloud River to be sacred and connected to the past salmon runs. Restoration of salmon to the McCloud River would provide cultural, ceremonial, and religious opportunities that are currently absent for the Winnemem Wintu. Representatives of the Winnemem Wintu Tribe are anticipated to participate in onsite informational and cultural consultation meetings in order to identify areas of cultural significance and sensitivity to ensure that planned actions address Tribal concerns and cultural needs. Therefore, we expect the effects of the proposed action on cultural resources will be beneficial but not significant. We do not expect the Remote Captive Broodstock Project to have any adverse or beneficial impacts on Cultural Resources.

4.1.4 Commercial and Recreational Fisheries

4.1.4.1 Ocean Harvest

Effects described in the Final EA apply to this Supplemental EA. The proposed action will not further change the effects on Ocean Harvest because of the small scale of the RSI Project, the self contained nature of the Remote Captive Broodstock Project, and because all actions will be carried out by well trained personnel.

4.1.4.2 Freshwater (Inland) Harvest

Effects described in the Final EA apply to this Supplemental EA. The proposed action will not further change the effects on Freshwater (Inland) Harvest because of the small scale of the RSI Project, the self contained nature of the Remote Captive Broodstock Project, and because all actions will be carried out by well trained personnel.

4.2 Short- and Long-term Effects of Alternative 2 (No Action)

Under this alternative, the Environmental Consequences would not change from those described in the Final EA.

4.3 Cumulative Impacts

The cumulative impacts described in the Final EA apply to this Supplemental EA. This action is not expected to significantly add to cumulative impacts.

5. List of Preparers and Persons and Agencies Consulted

Kate Spear, Howard Brown
NOAA National Marine Fisheries Service
West Coast Region
California Central Valley Area Office

6. References Cited

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