U.S. Fish and Wildlife Service

Final Environmental Assessment

Klamath Falls National Fish Hatchery

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U.S. Fish and Wildlife Service

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State Historic Preservation Office (SHPO)

Tribal

U.S. Army Corps of Engineers (USACE)

State of Oregon

Stakeholders

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SECTION 1
INTRODUCTION, PURPOSE, AND NEED

1.1 Introduction

The primary goal of this document is to analyze impacts to the natural and human environment from the construction and operations of the Klamath Falls National Fish Hatchery (also known as the Klamath Basin Sucker Assisted Rearing Program [KBSARP]) and will be herein referred to as "Project". This Environmental Assessment (EA) is being prepared by the U.S. Fish and Wildlife Service (USFWS) to comply with the requirements of the National Environmental Policy Act (NEPA) of 1969 and its implementing regulations, which are set forth in the Council on Environmental Quality regulations 40 CFR Parts 1500-1508. The EA assists the USFWS in determining whether the alternatives for the Project would have a significant impact on the quality of the natural and human environment and if preparation of an Environmental Impact Statement (EIS) is required. This EA has been prepared in accordance with the 2018 USFWS NEPA Draft Reference Handbook (USFWS 2018a).

The USFWS is the lead federal agency and must decide on an alternative that best meets the purpose and need for the Project. The USFWS must also decide if the preferred alternative would or would not constitute a major federal action significantly affecting the quality of the natural and human environment. If the USFWS Responsible Official determines that the preferred alternative would not significantly affect the quality of the natural and human environment, they would prepare and sign a Finding of No Significant Impact (FONSI), and the project may proceed. If the USFWS Responsible Official determines that the preferred alternative would significantly affect the quality of the natural and human environment, an EIS and a Record of Decision (ROD) must be prepared and signed before the project can proceed.

1.2 Background

The shortnose sucker (*Chasmistes brevirostris*) and the Lost River sucker (*Deltistes luxatus*) were listed by the USFWS as endangered in 1988 (USFWS 1988). These species are long-lived freshwater fish that are endemic to very few lakes in the upper Klamath Basin of southern Oregon and northern California. The species have declined from 75 to 60 percent since 2001. The recovery plan for both species (USFWS 2013) calls for the development of a controlled propagation program once the species reaches a population decline threshold to prevent extinction. A species status assessment was completed in 2019 (USFWS 2019a) and notes the probable extinction of the shortnose sucker within 30 to 40 years without recovery efforts, and critically low numbers of the Lost River sucker at 50 years. It also indicates that the shortnose sucker has reached a critical population threshold and the Lost River sucker is close behind. This has prompted the USFWS to initiate the artificial propagation action called out in the recovery plan.

In 2016, a partnership was established between the USFWS and the landowner of a fish-rearing site (Gone Fishing Hatchery) to establish the current KBSARP on the property using the existing facility's water source, ponds, and some hatchery infrastructure. From 2016 to the present, shortnose suckers and Lost River suckers have been successfully propagated, and hatchery and rearing operations are determined to be an effective recovery tool. Therefore, the USFWS is interested in developing a hatchery facility to support the culture and release of these species in sufficient quantities to support existing wild populations at levels

that are viable and self-sustaining. This EA describes the evaluation of potential sites and alternatives in the Klamath Basin for development of a hatchery facility.

1.3 Purpose and Need

1.3.1 Purpose and Need Statement

The purpose of this Project is to develop a fish hatchery for rearing and release of up to 60,000 combined shortnose suckers and Lost River suckers per year to support existing wild populations of these species. There is a need to enhance long term redundancy[1] and resiliency[2] through controlled propagation of both species to arrest the decline and enhance shortnose sucker and Lost River sucker populations so that Endangered Species Act (ESA) protection is no longer necessary.

1.3.2 Support for Purpose and Need

The shortnose sucker and the Lost River sucker were listed by the USFWS as endangered in 1988 (USFWS 1988). A recovery plan was developed in 1993 (USFWS 1993) and revised in 2013 (USFWS 2013) to develop actions required to recover and protect both species. The recovery goal described in the 2013 revised plan is to "arrest the decline and enhance Lost River sucker and shortnose sucker populations so that Endangered Species Act (ESA) protection is no longer necessary" (USFWS 2013). Factors contributing to the population decline of both species have been attributed to degradation and loss of spawning, rearing, and adult habitats (only approximately 25 percent of the original habitat remains) (USFWS 2013). There are high larvae and juvenile mortality rates due to reduced rearing habitat, entrainment in water management structures, poor water quality, and negative interactions with introduced species (USFWS 2013).

The steady decline of shortnose suckers and Lost River suckers has continued since development of the recovery plans. The revised recovery plan provides recommendations for controlled propagation of the species to prevent extinction when other measures employed to maintain or improve a listed species have proven insufficient, as indicated by continued population declines (USFWS 2013). Development of a hatchery facility is needed to support controlled propagation of these fish species. The goals of the hatchery facility for meeting adequate culture and release numbers viable for self-propagating, mitigating reliance on wild-capture larvae, and other operational goals to arrest the decline and enhance shortnose sucker and Lost River sucker populations so that Endangered Species Act (ESA) protection is no longer necessary are described below.

Recruitment

Based on a population viability study (Rasmussen and Childress 2018) and a species status assessment (USFWS 2019a), the USFWS has determined that culturing and releasing 60,000 shortnose suckers and Lost River suckers of 200 to 300 millimeters (mm) in length per year is needed to maintain the currently existing, independent, and wild populations of the species at levels that are viable and self-sustaining. To

[1] Redundancy is the ability of a species to withstand catastrophic events, which is related to the number, distribution, and resilience of populations.
[2] Resiliency is the ability of the species to withstand stochastic disturbance events, which is associated with population size, growth rate, and habitat quality.

achieve this, the proposed hatchery facility should be capable of supporting the incubation of 100,000 sucker larvae, have stock pond capacity for successful rearing and larval development, and ensure adequate culture conditions for consistent growth and wellbeing until the target-release fingerling size is achieved.

Captive Breeding

Declining populations of shortnose suckers and Lost River suckers indicate that natural spawning in the wild has not been sufficient to support healthy populations; thus, captive breeding is necessary to improve sucker numbers and to mitigate the reliance on wild-captured larvae for hatchery operations. The hatchery should be capable of maintaining a captive broodstock population of males and females (1:1 male/female ratio) in holding ponds of 500 individuals of each species. This would reduce the reliance on the natural spawning population and provide an option for producing larvae if there comes a time when larvae are not produced in the wild.

Salvage Fish

Another threat to the health of shortnose sucker and Lost River sucker populations is the entrainment of individual fish in canals, ditches, and impoundments within the Klamath Basin. These fish face overwinter isolation from their natural habitat, desiccation, inability to spawn, starvation, poor water quality conditions, or likely predation. Hatchery operations that include facilities to hold salvage[3] and extended salvage[4] fish for periods of time to supplement their strength and size is needed. This would add to the number of fish that could be successfully released back into the wild.

1.4 Project Area

1.4.1 Location

The Project area is located at 3875 Lower Klamath Lake Road, near the town of Merrill, approximately 3.2 miles north of the Oregon-California State line and 10 miles south of Klamath Falls in Klamath County, Oregon (Appendix B-Map 1). It consists of approximately 25.5 acres of land within the existing larger parcel that is privately owned. The USFWS is in the process of establishing a lease agreement for three parcels within the private property that make up the Project area (Appendix B-Map 2).

1.4.2 Existing KBSARP Hatchery

The Project area is currently developed with the privately owned hatchery, which has been in operation since the late 1990s. The facility was used for commercial production of cichlids and tilapia until 2016, when the USFWS established a partnership with the landowner for operations of the KBSARP. From 2016 to the present, the USFWS have successfully propagated[5] shortnose suckers and Lost River suckers at the hatchery using the existing hatchery water source, ponds, and infrastructure. The existing hatchery features

[3] Salvage fish are fish rescued from entrainments that are kept at the hatchery facility for short periods of time until an appropriate time to release them back into the wild.
[4] Extended salvage fish are fish rescued from entrainments that are kept at the hatchery facility for long periods of time until they reach a mature size that will reduce the chance for mortality when released back into the wild.
[5] Propagate is the collection of wild larvae and juvenile suckers and culture them to the desired survival length.

within the approximately 25.5-acre Project area are listed below and depicted in Appendix B-Map 3. Photographs of the Project area are provided in Appendix C.

- Geothermal well and pump house: The water source for the hatchery is a permitted geothermal well that provides water at approximately 190° F. The well is housed in a small pumphouse near the southern Project area boundary. The water right for the well is 0.89 cubic feet per second (cfs) (i.e., 399 gallons per minute [gpm]).
- Holding tank: Water from the well is pumped into a holding tank adjoining the well. The holding tank discharges water through a piping system into the downstream influent retention ponds.
- Influent retention ponds: There are three influent retention ponds that cool the geothermal well water down to approximately 16° to 19° C (61° to 66° F) before use in aquaculture activities.
- Rearing ponds: There are 46 0.034-acre ponds (24 on Parcel 1 and 22 on Parcel 2) and four 0.25-acre ponds, all of which are currently used for rearing suckers.
- Hatchery greenhouse: A 3,000 sq-ft hatchery greenhouse provides a protected area that serves as the larval incubation lab, as well as a quarantine area for tanks that hold salvage fish during rehabilitation. The building is not currently equipped with restroom facilities or potable water.
- Effluent retention ponds: Effluent from the rearing ponds is drained into the two effluent retention ponds for passive solid settling before discharging downstream and offsite.
- Aeration and water distribution piping (not shown on Map 3): The facility has a piping system that delivers geothermal well water and low-pressure air to facility ponds and the hatchery greenhouse.
- Access roads: The facility has two gravel/dirt access roads that lead to the southern and northern portions of the Project area. Access from Lower Klamath Lake Road to the Project area (Parcel 3) is shared with the privately owned residence on the property (outside of the Project area).

1.4.3 Existing KBSARP Hatchery NEPA Compliance

USFWS has successfully propagated shortnose suckers and Lost River suckers at the hatchery since 2016. The installation and operation of these features are covered under the following existing NEPA compliance documents:

- Klamath Basin Sucker Rearing Program (USFWS 2018b and 2019c)
- Lease Gone Fishing Property (USFWS 2019d)
- Net Pen Grow-Out for Suckers (USFWS 2020f, g)
- Stocking Lost River and Shortnose Suckers into Upper Klamath Lake (USFWS 2020h, i)
- Environmental Action Statement for the Proposed Klamath Falls National Fish Hatchery (USFWS 2020j)

SECTION 2
SCOPING

2.1 Scoping Goals and Objectives

Scoping is used to identify the resource concerns for a project, to determine potential opportunities, obstacles, controversy, and opposition, and to identify and discuss alternatives to meet the project's purpose and need. The scoping process for this Project is described below.

2.2 Scoping Meeting and Resource Concerns

An internal scoping meeting was held on May 14, 2020. Attendance of personnel includes representatives from the USFWS, McMillen Jacobs Associates, and Water, Civil, and Environmental Inc. (WCE). The meeting provided opportunity for USFWS and Project personnel to discuss Project alternatives, identify alternatives considered in detail (Section 3.2), express any specific concerns and their relevance to the alternatives considered in detail, and review applicable resource concerns. A copy of the Scoping Meeting Minutes is provided in Appendix C. A summary of resource concerns discussed and their relevancy to the alternatives considered in detail is provided in Table 2-1 below. Resource items determined to not be relevant to the alternatives considered in detail were eliminated from detailed study and are not discussed any further in this EA. Relevant resource items pertaining to the alternatives considered in detail are discussed in Section 4.0.

Table 2-1. Scoping Resource Concerns Summary

Item/Concern	Relevant to the Alternatives Considered in Detail?		Rationale
	Yes	No	
Physical Environment			
Prime and Unique Farmland		X	The Project area only contains farmland of statewide importance and not prime or unique farmland according to the soil survey (U.S. Department of Agriculture Natural Resources Conservation Service [NRCS] 2019).
Geology / Mineral Resources	X		Diatomite is found within the Project area. There are no other geologic features or mineral resources that would be impacted by Project actions.
Soil and Erosion	X		Construction disturbance would increase erosion potential at the Project area.
Surface/Ground Water Quality	X		Construction ground disturbance and site operations have the potential to impact surface water quality at the Project area.
Surface/Groundwater Quantity and Water Rights	X		Project actions do not change the amount of water to be pumped from the existing water right but may require replacement of the existing well.
Waters of the U.S.		X	Waters of the U.S. may be present in the Project area.
Wetlands	X		Wetlands may be present in the Project area.
Regional Water Mgt. Plans and Coastal Zone Management Areas		X	The Project area is not located within a Regional Water Management Plan or Coastal Zone Management Area.

Item/Concern	Relevant to the Alternatives Considered in Detail?		Rationale
	Yes	No	
Floodplain Management		X	Project actions would not change flood conditions or impact floodplain management within the Project area.
Wild and Scenic Rivers		X	There are none in or near the Project area according to National Wild and Scenic Rivers System (NWSRS) Map (NWSRS 2020).
Sole Source Aquifers		X	There are none in or near the Project area according to the U.S. Environmental Protection Agency (EPA) Sole Source Aquifer Program Map (EPA 2020).
Air Quality	X		Construction activities produce emissions and fugitive dust.
Clean Air Act		X	Permits would not be required.
Greenhouse Gases / Climate Change		X	The Project would have no measurable impact to greenhouse gases or climate change.
Biological Environment			
Special Status Plant Species (Federal and State listed)		X	There are no ESA or state-listed plant species, or suitable habitat located within the Project area. An Intra-Service Biological Assessment (BA) will be completed.
Forest Resources		X	There are no forested areas within or near the Project area.
Noxious Weeds and Invasive Plant Species	X		Construction disturbance increases risk of invasive species becoming established within the Project area.
Natural Areas / Conservation Areas		X	There are no Natural Areas or Conservation Areas located within or adjacent to the Project area.
Riparian Areas		X	There are no riparian areas within the Project area.
Essential Fish Habitat		X	There is no essential fish habitat located within or near the Project area.
National Wildlife Refuges / Wilderness Areas		X	No National Wildlife Refuges or Wilderness Areas are located in or near the Project area according to the Wilderness Areas map (National Wilderness Preservation System (Wilderness Connect 2020) and Wildlife Refuge Map (USFWS 2020a).
Wildlife Habitat	X		Disturbance to general wildlife and wildlife habitat during construction near the Project area.
Coral Reefs		X	There are no coral reefs within or adjacent to the Project area.
Special Status Animal Species (Federal and State listed)	X		There may be ESA species located within the Project area. An Intra-Service Biological Assessment (BA) will be completed. State listed animal species also have the potential to occur in the Project area.
Invasive Animal Species	X		There is potential for introduction of invasive aquatic animal species from hatchery operations within the Project area.
Migratory Birds / Bald and Golden Eagles	X		Migratory birds, bald and golden eagles, and associated habitat are present within the Project area.
Livestock Grazing		X	There is no livestock grazing within the Project area.
Human Environment			
Socioeconomics		X	There are no communities in or near the Project area that would be measurably affected socially or economically from the Project actions.
Historic Properties / Cultural Resources	X		A cultural resource survey will be conducted in the Project area.
Hazardous Materials	X		Equipment, fuels, and other hazardous substances used in hatchery operations may be stored and used in the Project area.

Item/Concern	Relevant to the Alternatives Considered in Detail?		Rationale
	Yes	No	
Environmental Justice and Civil Rights		X	No concerns as no area populations would be impacted by Project actions.
Public Health and Safety		X	There would be no change to public health and safety. The Project is on private land and public access is not permitted.
Recreation		X	The Project area is on private lands where public recreation is not permitted and recreation activities are not performed.
Land Use / Public Access		X	Land use as a hatchery would remain the same and the Project area is on private property where public access is not permitted.
Visual Resources		X	The Project area is disturbed and developed with a fish hatchery facility and there are no visual resources, scenic views, high vantage points, scenic overlooks, or scenic driving routes present.
National Scenic and Historic Trails		X	No National Scenic and Historic Trails located in or near Project area according to a National Trails System Map (National Park Service [NPS] 2020).
Natural Areas and Parklands		X	The site is located on private land and there are no natural areas or parks located within or near the Project area.
Transportation Infrastructure		X	There would be no modification or impacts to transportation infrastructure.
Noise	X		Temporary construction-related noise is expected within the Project area.
National Landmarks, Monuments, and Historical Sites		X	None located in or near Project area based on National Natural Landmarks Map (NPS 2016), National Parks Map (NPS 2020b), and National Register of Historic Places (NRHP) data (NPS 2020c).
Scientific Resources		X	There are no scientific resources in the Project area.

SECTION 3
ALTERNATIVES

3.1 Formulation Process

Numerous alternatives were developed by the Project team based on the ability to address the purpose and need of the Project and were formulated in consideration of four criteria: completeness, effectiveness, efficiency, and acceptability. In accordance with NEPA (40 CFR 1502.14), some of these initial alternatives were eliminated from further analysis due to high cost or other critical factors.

Eight sites were identified, geographically extending from the upper Klamath Basin to the Lower Klamath Lake area[6] (USFWS 2015a, b) as potential hatchery development sites. USFWS evaluated each site for feasibility of meeting the hatchery facility goals for adequate culture and release numbers viable for self-propagating, mitigating reliance on wild-capture larvae, and other facility operational goals, as identified in Section 1.3.2. Seven of the eight sites were found to not meet the required goals for the hatchery facility and were eliminated from further study (see Section 3.3). One site (Gone Fishing Hatchery) was determined to be adequate to meet the facility goals, and two development strategies for this site were explored (McMillen Jacobs Associates 2020a): 1) modifications of the existing hatchery while staying within the existing developed footprint of the facility; and 2) modifications of the existing hatchery and expanded development outside of the existing developed facility footprint. Further evaluation found that the hatchery facility goals could not be met by staying within the existing developed facility footprint, and this option was eliminated from further study (see Section 3.3).

3.2 Alternatives Considered in Detail

Alternative analysis is required to determine feasible methods that can meet the purpose and need of the project. The No Action Alternative must also be considered. The alternatives studied in detail include the No Action Alternative and the Full Hatchery Build-out Alternative (Preferred Alternative). A description of the measures that would be implemented for each of the alternatives is provided in Sections 3.2.1 and 3.2.2 below.

3.2.1 No Action

The No Action Alternative would continue the currently permitted activities with the same facility configuration at the Gone Fishing Hatchery site as described in Section 1.4.2 Existing KBSARP Hatchery (McMillen Jacobs Associates 2020a).

[6] The Shortnose Sucker Conservation Aquaculture Facility and Site Feasibility Assessment Volumes I and II discuss in detail the revised recovery plan for shortnose suckers and Lost River suckers, the biological criteria and operations schedules required for any hatchery established for these species, the eight sites selected for further evaluation, the criteria established for determining the feasibility of each site, and the costs associated with the proposed project. This information is incorporated by reference in this document; please refer to the Site Feasibility Assessment documents for more information.

3.2.2 Full Hatchery Build-Out Alternative (Preferred Alternative)

The Full Hatchery Build-out Alternative includes reconfiguring the existing site layout and expanding the hatchery facility to meet the Project goals and provide a more reliable, safe, and efficiently operated site (McMillen Jacobs Associates 2020a and KPFF 2020). The alternative measures are listed below and are also depicted in Appendix B-Map 4.

Ponds

Additional ponds would be constructed in areas outside of the existing hatchery footprint. Approximately 12 acres of ponds would be constructed ranging in size from 0.007 to 1.12 acres in size with a maximum combined volume of 1,821,000 cubic feet (42 acre-feet) to support the annual production of 60,000 shortnose suckers and Lost River suckers.

Water Distribution System

A new geothermal well would be installed (location to be determined) as a backup to the existing well and a new pump house would be constructed around the well. Only one well would be running at time and pumped water volumes would stay within the existing water rights. The holding tank would be replaced in the same general vicinity to accommodate improved groundwater tempering and water distribution across the site. The water piping distribution system and aeration system and equipment would be replaced for the new site layout.

Hatchery Building

A new hatchery building (4,000 to 7,000 sq-ft) would be constructed near the site entrance to replace the existing hatchery greenhouse. The new hatchery building would provide capacity for egg incubation, larval rearing, and salvage quarantine. It would also be equipped with restrooms, a breakroom, storage, and wet labs for water quality testing. The existing hatchery building would be demolished following the completion of the new hatchery building.

Other Buildings

A new maintenance shed (4,000 to 7,000 sq-ft) would be constructed near the new hatchery building. A new, smaller maintenance shed and a new chemical storage shed would be constructed at the southern end of the site.

Equipment and Monitoring

The mechanical and Supervisory Control, Automation, and Data Acquisition (SCADA) system supporting the site would be upgraded to stabilize the program, add reliability to the infrastructure, and mitigate any risk of mechanical failure. Video monitoring systems, including remote monitors and alarms, would be installed to reduce the risk of vandalism, personnel hazards, and water quality issues.

Site Access

A perimeter fence would be constructed around the facility and egress gates installed at select locations through the perimeter fence for personnel, as well as emergency vehicle turnaround access and accessibility

around the hatchery buildings. Vehicle access into the facility would remain the same as it is currently, from the existing access driveway off Lower Klamath Lake Road.

Production Capacity

The hatchery site would be modified to increase the rearing capacity, improving the production of shortnose suckers and Lost River suckers. The capacity for extended salvage fish would increase from 510 to 2,250, capacity for broodstock would increase from 255 to 1,750, capacity for larvae incubation would increase from 40,000 to 100,000, and capacity for salvage fish from 1,500 to 2,500. The current production of juvenile rearing (2- and 3-year-old fish) would increase from 21,055 annually to 66,250 annually. The full hatchery build-out would include propagation capabilities for both culture of collection wild larvae and juvenile suckers as well as fertilization of eggs with milt.

Construction Timing and Sequencing

Construction measures for the full hatchery build-out would be based on available USFWS funding and could be implemented over the course of 30 years. Initial phasing is expected to be completed according to the sequencing listed below.

Phase 1 (implemented within the first 5 years for initial hatchery startup)

- Pond construction and new water distribution system installation.
    - Influent Retention Pond
    - 1st Tier Ponds: B1, C1 – C8
- Site access roads, gates and security.

Phase 2 (implemented after Phase 1 is complete)

- New geothermal well and pump house installation.
- Pond construction and additional water distribution system installation.
    - 2nd Tier Ponds: C9 – C14, D1 – D9
    - Broodstock Ponds: A1 – A6
    - Extended Salvage: A7 – A8
    - Effluent Retention Ponds: D10 – D12
    - Raceways: three
- Construction of hatchery building, solar panels, transformers and backup generators, septic system, maintenance sheds, and chemical storage shed.
- Various mechanical upgrades.
- Site access roads, gates and security.

Long Term Operations and Maintenance

A long term operations and maintenance plan would be developed for the Project during the final design stage of the Project and would be finalized prior to the start of construction activities. It would specifically describe how the hatchery constructed in Phases 1 and 2 would be operated and maintained within the Project area. Typical operations and maintenance activities expected during the 30-year lease agreement which are analyzed in this EA include (but not limited to) water quality monitoring, feeding, draining, and cleaning of ponds; pond infrastructure maintenance and repair; pond netting maintenance and repair; water distribution system maintenance and repair; road maintenance and repair; routine invasive weed species removal; and tagging and stocking fish. As new components are constructed at the hatchery, USFWS would update the long term operations and maintenance plan to reflect these changes. This plan would be developed and coordinated with Project partners for review, as appropriate, prior to the start of hatchery operations.

3.3 Alternatives Considered but Eliminated from Detailed Study

The following alternatives were investigated for development of a hatchery facility but were ultimately found to be inadequate, as they did not fully meet the purpose and need for the Project (USFWS 2015a, b and McMillen Jacobs Associates 2020a).

3.3.1 U.S. Fish and Wildlife Service Office Site

This approximately 2-acre site is on a paved cul de sac across the street from the local offices of the USFWS, within the city of Klamath Falls, Oregon. The site is developed with one- and two-story office and shop-type buildings and large asphalt parking areas. This site was eliminated from detailed study because an evaluation determined that there is not enough space at the site or on adjacent undeveloped land to support a hatchery facility of the size required to meet the purpose and need. In addition, there are no groundwater rights or supply associated with the site and none could be developed due to state restrictions. Therefore, this site was eliminated from further study.

3.3.2 Agency Barnes Ranch, Upper Klamath National Wildlife Refuge Site

The Agency Barnes site is located due north of Upper Klamath Lake and borders the Upper Klamath National Wildlife Refuge (NWR). Construction of a hatchery facility at this site would require extensive road modifications for three to four miles of roadway in addition to replacement of bridges for road widening. The site is located in a floodplain and is flooded periodically. No groundwater or surface water rights currently exist for this site, and a water right would need to be acquired. The site is also being investigated for a habitat conservation project. Based on the high project cost for road modifications and floodplain development requirements, low likelihood of obtaining a water right, and possible use as a habitat conservation site, this site was eliminated from further study.

3.3.3 Stearns Pond, Lower Klamath National Wildlife Refuge Site

The Stearns Ponds site is an approximately 50,000-acre refuge located within the Lower Klamath NWR, just south of the Oregon-California border in Siskiyou County, California. It is located within the Bureau of Reclamation's Klamath Project (irrigation project). Lands at this site that are suitable for construction of

a hatchery facility consist of large parcels that are farmed by individuals under lease or share-crop arrangements with the USFWS, and availability is dependent upon expiration of the individual land use agreements. There is limited water supply at this site, and it is unknown if a sufficient water supply is present without additional investigations. Because site availability is limited based upon expiration of land use agreements and sufficient water supply is unknown, this site was eliminated from further study.

3.3.4 Otey Island, Lower Klamath National Wildlife Refuge Site

This site is located on the Lower Klamath NWR in California, a few miles northwest of the Stearns Pond site described in Section 3.3.3. It is owned and managed by the USFWS, with private property abutting two sides. There is a high-capacity well capable of producing 10 cfs (i.e., approximately 4,488 gpm) of high-quality groundwater near the western edge of this site; however, the site can only be used for temporary, unoccupied facilities and no permanent facilities are allowed. Therefore, this site was eliminated from further study.

3.3.5 Gone Fishing Site Partial Hatchery Build-out Alternative

This site is the same location as described for the Gone Fishing Site Full Hatchery Build-out Alternative described in Section 3.2.2. This alternative consists of reworking the 46 0.034-acre ponds into fewer, larger ponds within the current developed facility footprint, as well as servicing and/or upgrading various facilities related to hatchery operations. Even though this alternative improves the production of shortnose suckers and Lost River suckers, the estimated annual fish production still falls short of the production goal by more than 50 percent. Thus, this alternative does not meet the purpose and need for the project and was eliminated from detailed study.

3.3.6 Fort Klamath Ranch Hatchery Site

The privately owned Fort Klamath Ranch site is in the upper Klamath Basin due north of Agency Lake on Fort Creek in Oregon. The property includes an abandoned anadromous fish hatchery that was operated as a commercial salmon hatchery from 1984 through 1991, several acres of open pasture, and a large forested area. This site is privately operated and is not available to USFWS. This site was eliminated from detailed study because the land area available at this site would not readily accommodate the generic hatchery design presented in Section 4 of the 2015 Feasibility Study (USFWS 2015a, b) and is currently being privately operated.

3.3.7 Coleman National Fish Hatchery Site

The Coleman National Fish Hatchery is funded by the Bureau of Reclamation and operated by the USFWS. It occupies 75 acres adjacent to Battle Creek, a tributary to the Sacramento River, about 20 miles southeast of Redding, California. An associated facility called Livingston Stone is a short distance downstream and occupies 0.4 acres. Both sites are accessible by a well-maintained highway network. This site was eliminated from detailed study because there is inadequate space for the necessary facilities, water supply is unavailable, and program fish would have to be transported more than 200 miles from collection and release sites to this out-of-basin location.

3.3.8 Williamson River Delta TNC Preserve Site

There are three parcels (E-4 Field, Tulana Ag Field, and Goose Bay parcels) owned and managed by The Nature Conservancy along the Williamson River Delta north of Klamath Lake in Oregon. All three parcels lack groundwater rights but are being farmed and supplied water for irrigation through surface water flow. Irrigation water is provided seasonally and does not flow year-round; a year-round water supply would be needed to maintain hatchery operations. A surface water right transfer would be necessary to use surface irrigation water. Extensive water treatment measures likely would be needed to filter and disinfect the irrigation surface water. There are currently no available groundwater rights on the Williamson River Delta Preserve, and it is unlikely that a new groundwater right could be obtained. Based on the lack of year-round water supply, uncertainty of success for transfer of surface water rights, required surface water treatment, and complications of obtaining groundwater rights, this site was eliminated from further study.

SECTION 4
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

The environmental analysis process has been conducted in compliance with applicable federal, state, and local regulations. The resources described in this section were determined during the scoping process to be relevant to the alternatives actions. Resources determined to not be relevant to the alternatives actions have been eliminated from detailed study. Refer to Section 2.0 for a complete list of resources and rationale for including or eliminating them from detailed study.

4.1.1 Affected Environment

The affected environment describes the existing area that could be affected by the alternatives, including the areas of physical, biological and human environment resources, and defines the context in which the impacts could occur.

The Project area is identified in the existing conditions map (Appendix B-Map 3) and encompasses the construction disturbance limits for alternative measures. The Project area covers approximately 25.5 acres of land and Table 4-1 summarizes the physical setting of the Project area.

Table 4-1. Physical Setting Summary

Physical Setting Information		Information Source
Location		
Location	3875 Lower Klamath Lake Road, Klamath Falls, Klamath County, Oregon.	N/A
Topography		
Elevation	Approximately 4130 to 4160 feet North American Vertical Datum 1988 (NAVD88).	Lost River Oregon-California 7.5' Quadrangle (U.S. Geologic Survey [USGS] 2020)
General Topographic Gradient	Sloping southwest	
Geology		
Geologic Units	Sedimentary rocks (Tms), Silica-cemented sandstone deposits (Tss)	Preliminary Geologic Map of the Hamaker Mountain, Worden, and Lost River 7.5' Quadrangles, Klamath County, Oregon (Hladky and Jenks 2007)
Unit Description	**Tms (Pliocene and Miocene)** – Tan, white, brown, and grey, soft but consolidated, tuffaceous mudstone, with subordinate claystone and sandstone. These sedimentary rocks are found throughout the mapped area, both as interbeds between the basalt and basaltic andesite lava flows and as thick, laterally extensive deposits. Thickness varies widely with some exposures having only a thin amount of sediments and others 30 meters or more of sediments.	

Physical Setting Information		Information Source
	Tss (Pliocene and Miocene) – Silica-cemented, light tan to grey, fine to medium grained, well-rounded sand to pebble deposit that appears to be associated with the principal valley-forming faults. Silica-cementation is likely the result of hydrothermal deposition. Sandstone layers are thinly bedded and some are cross-bedded often containing rounded rip-up clasts of the underlying white claystone/siltstone layers. The sandstone layers form prominent capping benches. Exposed sections range from 3.5 to 5 meters in thickness, but the entire cemented and uncemented sandstone layers may be thicker.	
Soil Characteristics		
Soil Type	**Capona loam, 5 to 15% slopes (9C)** – See Section 4.2.2 for soil description.	Web Soil Survey (NRCS 2019)

4.1.2 Environmental Consequences

USFWS has the responsibility under NEPA to identify and address effects on the environment that may result from the Project alternatives. These alternatives include the No Action Alternative and the Full Hatchery Build-out Alternative (Preferred Alternative) (Appendix B-Map 4). Potential impacts to the natural and human environment are described in terms of their duration, level of intensity, and type. The following lists the specific terminology used to describe impacts associated with project actions.

Duration

- Short Term – Impacts that last during the duration of construction and shortly after (0 to 2 years).
- Long Term – Impacts that last during and/or after construction, and operations and maintenance activities (2 to 30 years).

Level of Intensity

- No Impact – Resource conditions would not change.
- Negligible – Resource condition changes would be so slight there would no measurable or perceptible consequence to the resource.
- Minor – A small measurable effect to the resource, but localized, small, and of little consequence to the resource. Mitigation measures, if needed to offset adverse effects, would be easily implemented and successful based on knowledge and experience.
- Moderate – A measurable effect to the resource from the alternative actions. Mitigation measures would likely be needed to offset adverse effects and could be extensive, moderately complicated to implement, and probably successful based on knowledge and experience.
- Substantial – A large, measurable effect to the resource from the alternative actions. Mitigation measures would be needed to offset adverse effects and could be extensive and complicated to implement.

4.2 Physical Environment

4.2.1 Mineral Resources

Affected Environment

Klamath County is classified as having a low mineral resource potential, and there are no mining claims in or near the Project area (Madin et al. 2016); however, the mineral diatomite has been identified on-site. Diatomite, also known as diatomaceous earth, is the fossilized remains of single-celled aquatic algae (diatoms) and is a friable, porous, light-colored sedimentary rock with high concentrations of silica. The mineral is mined and used as a filter media, functional additive, absorbent, soil amendment, abrasive, and natural insecticide. Diatomite is a bulk product which, to be produced economically, must be available in large deposits that can be mined, processed, and transported to market at low unit cost (Peterson and McIntyre 1970). The mineral is abundant across much of Klamath County, with a 240- to 400-foot exposure near Klamath Falls, massive beds up to 250 feet thick separated by thin lenses of tuffaceous siltstone near the town of Sprague River, and other large exposed outcrops at Olene Gap, Poe Valley, Wolff Ranch, and Prague River valley (Peterson and McIntyre 1970). The extent and thickness of the diatomite deposit on the Project site is unknown. There are no current or future plans to mine diatomite within the Project area. Additionally, the approximate 25.5-acre Project area does not provide a sizable area that would be economically feasible to mine.

Environmental Consequences

No Action Alternative: There would be no new construction or ground-disturbing activities; therefore, there would be no impact to mineral resources for this alternative over the short or long term.

Full Hatchery Build-out Alternative: Approximately 10 acres of the Project area is already developed with a hatchery facility. There is no mining of diatomite proposed, but it would be excavated and transported throughout the site as part of new hatchery construction. Diatomite is abundant across much of Klamath County, and development of the remaining approximately 10.5 acres of this site is expected to be negligible over the short and long term with regard to availability of diatomite mineral resources in the area.

4.2.2 Soil and Erosion

Affected Environment

Soil information presented in this section has been summarized from NRCS Web Soil Survey data (NRCS 2019) and a soil map is included in Appendix B – Map 5. The Project area is composed entirely of Capona loam (5 to 15 percent slopes) soils, which consist of alluvium and residuum derived from tuff, diatomite, and basalt that deposited on structural benches. Bedrock exists 20 to 40 inches below the ground surface, and a typical soil profile may include loam from 0 to 11 inches, gravelly sandy clay loam from 11 to 25 inches, and unweathered bedrock at 25 to 35 inches. The erosion hazard rating of this soil is slight, which indicates that erosion is unlikely under ordinary climatic conditions after disturbance to the soil surface has occurred. Soils having a slight erosion hazard rating are in areas that are nearly level or have a low angle grade, resulting in low water velocities.

Approximately 10 acres of the Project area is developed with a hatchery facility, and an additional 8.8 acres of soil has been disturbed and displaced from grading activities. Therefore, there is approximately 6.7 acres of undisturbed or undeveloped Capona soils remaining on-site.

Environmental Consequences

No Action Alternative: There would be no new construction or ground-disturbing activities; therefore, there would be no impact to soils for this alternative over the short or long term. The recently disturbed portions of the site are susceptible to erosion during precipitation events, and minor impacts are expected during the short term. Once vegetation has become established in the disturbed areas, impacts are expected to be negligible over the long term.

Full Hatchery Build-out Alternative: Approximately 6.7 acres of the remaining Capona soils on the site would be permanently altered for development of the hatchery (Appendix B – Map 5). Grounds disturbed during construction would temporarily have an increased potential for erosion, but proper Best Management Practices (BMPs) would be installed during and after construction to prevent and control soil erosion. After construction completion, disturbed areas would be developed with hatchery ponds, buildings, etc., and any disturbed grounds stabilized. Therefore, minor impacts in the form of increased erosion potential during construction are expected during the short term but would be mitigated based on construction timing and the implementation of BMPs. Erosion potential of soils would be negligible over the long term due to soils being stabilized by development of hatchery infrastructure. Minor short term and long term impacts would occur to Capona soils from permanent disturbance to the remaining 6.7 acres of undisturbed/undeveloped soils on-site.

4.2.3 Surface/Groundwater Water Quality

Affected Environment

There are no natural surface water bodies or streams located within the Project area. The existing hatchery facility maintains several constructed ponds that are supplied water through a geothermal groundwater well. Effluent from the ponds is conveyed into two excavated on-site ponds for passive solid settling before discharging off-site into another solid settling pond. Water discharged off-site is conveyed generally south through a pipe into a downstream private pond adjoining the greenhouses. Water in the private pond is used for irrigation at the greenhouse facility and overflow from the pond is conveyed downstream through a ditch generally south into S Canal (Appendix B – Map 6). The S Canal flows generally northwest, feeding water to agricultural lands and eventually drains into the Klamath River. This hydraulic connection between the Project and the Klamath River may require a National Pollutant Discharge Elimination System (NPDES) waste discharge permit unless they meet Oregon Department of Environmental Quality (ODEQ) exclusion criteria below (ODEQ 2002).

> *Facilities which produce less than 20,000 pounds of fish per year and feed less than 5000 pounds of food during the month of maximum feeding or facilities that hold fish, including fish monitoring or fish acclimation, do not require a NPDES permit unless required by the Department on a case-by-case basis.*

Currently the hatchery facility produces approximately 2,250 pounds of fish per year and feeds approximately 500 pounds of food during the month of maximum feeding. Therefore, an NPDES waste discharge permit is not necessary.

USFWS and ODEQ collected water testing samples from the geothermal well and ponds at the existing hatchery facility in 2019 and 2020. McMillen Jacobs Associates summarized the water testing results (McMillen Jacobs Associates 2020c), and the following constituents were identified outside of the EPA tapwater and ODEQ human health criteria for consumption industry standard limits from the geothermal well: aluminum, arsenic, copper, lithium, sodium, fluoride, sulfate, and pH. Arsenic was identified outside of the EPA dermal industry standard limit from the geothermal well.

Environmental Consequences

No Action Alternative: There would not be any increase in feeding or fish-producing operations; therefore, there would be no impact to surface water quality for this alternative over the short and long term. The existing hatchery facility does not have potable water, and there would be no impact to groundwater quality, as there would be no modifications proposed to the geothermal well or human use of this water over the short and long term.

Full Hatchery Build-out Alternative: Under this alternative, the hatchery would continue to discharge effluent downstream through the ditch system, as is currently performed. The amount of effluent discharged would increase from approximately 3 gpm to 7 gpm when averaged out over the course of a year. The hatchery would increase fish production to approximately 13,000 pounds of fish per year and feed approximately 2,500 pounds of food during the month of maximum feeding. USFWS will coordinate with the ODEQ to determine if a NPDES permit is required for hatchery operations. If a permit is required, all permit coordination will be completed prior to the start of construction or hatchery operations (as applicable).

Section 402 of the CWA for construction activities would require a NPDES 1200-C permit (for construction over 1 acre) to be obtained through ODEQ. During the construction, Project design elements, including required BMPs, would be implemented to reduce the quantity of sediment (1) entering drainages, and (2) flowing downstream and violating any federal or state water quality rules and regulations. This alternative would also meet Oregon antidegradation requirements. Construction BMPs would include, but would not be limited to the following:

- A Storm Water Pollution Prevention Plan would be required and implemented that contains erosion and sediment control and pollution prevention BMPs, such as, but not limited to, silt fences, settling ponds, fiber wattles, dust control, and/or earthen berms.

- Water bodies adjacent to construction and staging areas would be identified, and such measures as straw bales, silt fences, and other appropriate sediment control BMPs would be implemented to prevent the entry of sediment and other contaminants into waters.
- To ensure that accidental spills do not enter waters, the storage of petroleum-based fuels and the refueling of construction machinery would not occur outside of approved designated staging/batch plant areas. Furthermore, the Project would comply with state and federal water quality standards and toxic effluent standards to minimize any potential adverse impacts from discharges to waters of the U.S.
- No construction materials would be stockpiled or deposited in or near any water bodies.

With the implementation of the BMPs listed above, there would be minor impacts on surface water quality over the short term from increased erosion potential. Impacts to surface water quality would be negligible over the long term due to soils being stabilized by the development of hatchery infrastructure.

Groundwater quality testing from the geothermal well identified constituents outside the parameters for tapwater and human health consumption. The geothermal well water is not suitable for human consumption, and potable water would be brought onto the new hatchery facility. USFWS would perform additional testing regarding use of the geothermal well water on human skin and would complete a job hazard analysis to address any concerns on-site. The geothermal well water has been used for existing hatchery facility operations since 2016 and there have been no impacts identified to shortnose suckers or Lost River suckers as long as the water has been cooled to a suitable rearing temperature. There is no impact expected to groundwater quality over the short or long term of the Project.

4.2.4 Groundwater Quantity

Affected Environment

The current landowner holds a permit to appropriate water (permit number G-13285) from a groundwater well through the Oregon Department of Water Resources (ODWR) for use in aquiculture and geothermal heating. The permit was issued on December 29, 1997, for year-round use at a use rate of 0.89 cfs (399 gpm). A well was installed at the facility in February 1998 and is the point of diversion for the existing permit. Groundwater is pumped from the well to provide the facility with water for hatchery operations. The geothermal water is controlled by geologic faults along the front of the Klamath Hills, which allow groundwater that has circulated at great depths to rise upward into shallower aquifers (Boyd 2007). There is currently no indication of water-level decline or depletion for this aquifer (Gannett et al. 2007).

Environmental Consequences

No Action Alternative: There would be no change to the geothermal well operations; therefore, no impact to groundwater quantity is expected over the short or long term for this alternative.

Full Hatchery Build-out Alternative: This alternative includes installing a new well on-site to backup the existing geothermal well. A new permit to appropriate water would not be obtained, and the new well would use the existing permitted use rate of 0.89 cfs. Only one well would be allowed to pump water at a time and

not concurrently. Water withdrawal from the well would increase from existing withdrawal level due to the expanded nature of the hatchery. There have been no indications of strain on the geothermal aquifer (Gannett et al. 2007), and maximizing the permitted use rate of 0.89 cfs is not expected to strain the geothermal aquifer. Furthermore, the well would be operated within the State of Oregon regulations. USFWS would conduct routine testing of the wells to make sure they are pumping within the water right as well as perform groundwater level monitoring. Therefore, Project actions would be negligible over the short and long term since there would not be an increase of permitted groundwater withdrawals.

4.2.5 Wetlands

Affected Environment

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill material into waters of the U.S. and requires a permit for these activities unless the activities are exempt from Section 404 regulation. The Oregon Department of State Lands (ODSL) regulates removal or fill activity in waterways and wetlands under Oregon's Removal-Fill Law (ORS 196.795-990) and requires a removal-fill permit for activities on state-owned waterways or filling or removing 50 cubic yards or more of material in a wetland. McMillen Jacobs Associates performed a Waters of the U.S. and Wetlands Delineation in June 2020 (Appendix C) (McMillen Jacobs Associates 2020b). There are no waters of the U.S. in the Project Area but there are numerous non-jurisdictional ditches that convey water from existing hatchery operations to wetlands outside of the Project area. One small wetland was delineated within the Project area (Appendix B – Map 7). Approximately 290 sq-ft of emergent wetland, dominated by cattail (*Typha latifolia*) and climbing nightshade (*Solanum dulcamara)*, is present within the Project area in a roadside ditch along the western Project area boundary. The wetland was classified according to the Cowardin classification system (Cowardin et al. 1979) as palustrine, emergent, persistent, artificially flooded and excavated (PE1Kx).

Environmental Consequences

No Action Alternative: There would be no ground-disturbing activities and no impact to wetlands over the short and long term for this alternative.

Full Hatchery Build-out Alternative: This alternative would remove approximately 290 sq-ft (0.007 acres) of emergent wetland from hatchery infrastructure construction activities (Appendix B – Map 7). To comply with Section 404 of the CWA, authorization would need to be obtained from the U.S. Army Corps of Engineers (USACE) for filling or dredging in the wetland. USFWS will coordinate with USACE regarding permitting requirements for the Project and obtain any required permits prior to the start of construction. ODSL requires a permit if an activity involves filling or removing 50 cubic yards or more of material in a wetland. Project actions would involve less than 50 cubic yards of fill in the wetland, and an ODSL removal-fill permit would not be required. Impacts to wetlands within the Project area would be minor over the short and long term.

There are wetlands downstream of the Project area that would receive hatchery effluent water; however, this increased water flow would have a minor beneficial impact to the wetlands over the short and long term from additional hydrology during the dry summer months.

4.2.6 Air Quality

Affected Environment

Pursuant to requirements of the Clean Air Act (42 U.S.C 7401 et seq), the EPA has established health-based National Ambient Air Quality Standards (NAAQS) for six pollutants considered harmful to public health and the environment, known as criteria pollutants. NAAQS pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2), and lead (Pb).

Monitoring of NAAQS pollutants in Oregon is delegated to the ODEQ. The closest ambient air quality monitoring station is Klamath Falls, which is about 12 miles north of the Project Area. The Klamath Falls station monitored for PM2.5 and PM10 in 2018 (ODEQ 2019). Results for the Klamath Falls station show PM2.5 in compliance with EPA air quality standards in 2018 if wildfire smoke data are not included, but not in compliance when wildfire smoke data are included. Klamath Falls did not exceed EPA air quality standards for PM10 in any year from 2009 through 2018.

The Klamath Falls area has historically experienced problems with particulate pollution (PM 2.5 and PM10) due to topography, weather, and a large number of woodstoves (ODEQ 2020a). In addition, wildfires contributed to PM2.5 exceedances in Klamath Falls in 2017 and 2018 (ODEQ 2019). In 2012, ODEQ developed a comprehensive plan to reduce particulate matter pollution in the Klamath Falls area and ensure that Klamath Falls meets the PM2.5 standard (ODEQ 2012). In December 2018, the EPA established the Klamath Falls PM2.5 nonattainment area (ODEQ 2020a). The Project area is located approximately 5.5 miles to the south and outside of the nonattainment area boundary.

Environmental Consequences

<u>No Action Alternative:</u> Operations at the hatchery facility would continue as they do currently and consist of light-duty vehicle traffic; therefore, impacts to air quality are expected to be negligible over the short and long term.

<u>Full Hatchery Build-out Alternative:</u> Construction activities for this alternative would temporarily emit air pollutants. PM2.5 pollutants (CO, sulfur oxides [SOx], nitrous oxides [NOx], mobile source air toxics [MSATs], and greenhouse gases [GHGs]) are generated from heavy-duty diesel engines used by the construction equipment. Short term construction equipment is anticipated to include 1 backhoe, 2 excavators, 2 front loaders, 1 bulldozer, 1 grader, 1 skid steer loader, 4 dump trucks, and several light-duty vehicles and emissions from this equipment would be temporary, primarily during pond and building construction, and concentrated around specific areas at the construction site. Construction equipment emissions have been estimated to produce approximately 1,233 metric tons of CO2 at 100% usage for 12 months (2,080 hours) (Michigan Technological University 2020) and would increase CO2 emissions locally during construction. All construction equipment would meet EPA emissions standards depending on the engine type (i.e., spark-ignition or compression-ignition), and model year of the equipment used (EPA 2017). Therefore, CO2 emissions will be within federally permitted levels and below the annual 25,000 metric tons reporting requirement for EPA (EPA 2009) for construction activities.

PM10 emissions are associated with the dust created from demolition, land clearing, ground excavation, cut-and-fill operations, and road construction. Construction emissions would be greatest during the earthwork phases because of the dust associated with this activity. Fugitive dust can also be produced by winds blowing through the construction site and by trucks carrying uncovered loads. Additionally, mud tracked onto paved roads leading to and from the construction site creates a source of fugitive dust (i.e., road dust) after it dries. There is no fugitive dust creation anticipated during operations and maintenance of the new hatchery facility since the Project area would be stabilized. Fugitive dust, MSAT, and GHG emission increases associated with construction would be minimized by implementing BMPs and include the following:

- Spraying the soil on-site with water or other similar approved dust suppressant/soil binder.
- Wetting materials hauled in trucks, providing adequate freeboard (space from the top of the material to the top of the truck), or covering loads to reduce emissions during material transportation/ handling.
- Providing a stabilized construction entrance (track-out pad), wheel washers, and/or other similar BMPs at construction site access areas to reduce track-out of site materials onto the adjacent roadway network.
- Removing tracked-out materials deposited onto adjacent roadways.
- Wetting material stockpiles to prevent windblown emissions.
- Establishing vegetative cover on bare ground as soon as possible after grading to reduce windblown dust.
- Requiring appropriate emission-control devices on all construction equipment.
- Using only properly operating, well-maintained construction equipment.

Long term operations and maintenance equipment is anticipated to include 1 skid steer loader, 1 agricultural tractor, 2 electric utility carts, and several light-duty vehicles. Equipment emissions have been estimated to produce approximately 70 metric tons of CO2 at 50% usage for 12 months (1,040 hours) (Michigan Technological University 2020) and would increase CO2 emissions locally during operation. All equipment would meet EPA emissions standards depending on the engine type (i.e., spark-ignition or compression-ignition), and model year of the equipment used (EPA 2017). Therefore, CO2 emissions will be within federally permitted levels and below the annual 25,000 metric tons reporting requirement for EPA (EPA 2009) for operations and maintenance activities.

The Project site is located outside of a NAAQS nonattainment area, and no permits are expected. Though construction activities may lead to a temporary increase in emissions and fugitive dust around the construction site, BMPs would be utilized to reduce emissions. The Project area is also surrounded by farmland that is disturbed regularly every year through tilling, harvesting, and other farming operations. In comparison of agricultural operations alone, the county contains 482,999 acres of farmland (U.S. Department of Agriculture 2017) that is regularly disturbed and contributes to fugitive dust and other pollutants. This alternative would have a short term disturbance to approximately 25.5 acres (or 0.005% of the ground disturbance created from agricultural operations in the county) from construction. Impacts are expected on a county scale to be minor over the short term and construction activities are not expected to

violate any air quality standards. Traffic associated with the operation and maintenance of the new hatchery facility would consist of light-duty equipment and vehicle traffic; therefore, impacts to air quality are expected to be negligible on a county scale over the long term.

4.3 Biological Environment

4.3.1 Noxious Weeds and Invasive Plant Species

Affected Environment

Executive Order 13122 states that "a federal agency shall not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction and spread of invasive species in the U.S. or elsewhere." Noxious weeds and invasive plants are non-native plant species designated by state law or county ordinance because they cause, or have the potential to cause, extraordinary negative economic and ecological impacts.

The Oregon Department of Agriculture (ODA) Noxious Weed Control Program provides statewide leadership for coordination and management of several state-listed noxious weeds (ODA 2019). The Klamath County Board of Commissioners declared in 2020 that all Klamath County is a Weed Control District and identified 51 weeds as noxious to be controlled as indicated by Order OR2020-049 (Klamath County 2020). Table 4-2 below lists the plant species identified within the Project area that are included in ODA or Klamath County weed lists, or if not listed, were identified as non-native species for the area. Note that the plant cover on-site consisted primarily of crested wheatgrass (*Agropyron cristatum)* and cheatgrass (*Bromus tectorum*), which are both non-native plant species.

Table 4-2. Noxious, Invasive, and Non-Native Plant Species Observed

Name	Scientific Name	State Weed Class	County Weed Class	Non-Native
Russian olive	*Elaeagnus angustifolia*	NL	NL	Yes
Canada thistle	*Cirsium arvense*	B	B	Yes
Climbing nightshade	*Solanum dulcamara*	NL	NL	Yes
Cheatgrass	*Bromus tectorum*	NL	NL	Yes
Crested wheatgrass	*Agropyron cristatum*	NL	NL	Yes
Curly dock	*Rumex crispus*	NL	NL	Yes
Kochia	*Kochia scoparia*	B	NL	Yes
Prickly lettuce	*Lactuca serriola*	NL	NL	Yes
Ryegrass	*Lolium perenne*	NL	NL	Yes
Scotch thistle	*Onopordum acanthium*	B	B	Yes
Tumble mustard	*Sisymbrium altissimum*	NL	NL	Yes
Clasping pepperweed	*Lepidium perfoliatum*	NL	NL	Yes

NL = not listed

The Project area primarily consists of non-native and noxious or invasive plant species. Three of the non-native species identified are also included on the ODA or Klamath County weed lists and are classified as a B-listed weeds. ODA and Klamath County classify the B-listed weeds as described below (ODA 2019 and Klamath County 2020):

- B Listed (ODA) – A weed of economic importance, which is regionally abundant, but which may have limited distribution in some counties.

- B Listed (Klamath County) – weeds of known economic importance, which in some parts of the county are abundant, but may have limited distribution in other parts of the county.

Environmental Consequences

No Action Alternative: The disturbed portions of the hatchery facility currently contain weed species. There would be no additional disturbance of ground associated with this alternative; therefore, impacts to noxious weeds and invasive plants would be negligible over the short and long term since there would be no new areas for these species to colonize.

Full Hatchery Build-out Alternative: This alternative includes ground-disturbing activities that would put the Project area at risk for future invasion of noxious weeds. However, most plants on-site are currently non-native or noxious/invasive plant species. BMPs would be implemented during construction to prevent

the spread of noxious weeds/invasive plant species and to comply with Executive Order 13112. During construction and until restoration areas are fully established, they would be maintained on a regular basis to prevent the establishment of noxious weeds and invasive plant species. Non-desirable plant species would be controlled by cleaning equipment prior to delivery to the Project site and eradicating these species as discovered before the start and during construction. Impacts of increased risk for establishment of noxious weeds/invasive plants would be minor over the short term with implementation of BMPs. After construction, most of the site would be developed, decreasing available grounds for weeds to become established, and impacts are expected to be negligible over the long term since the majority of the hatchery facility would be stabilized and USFWS would implement an invasive species maintenance plan.

4.3.2 Wildlife Habitat

Affected Environment

The Project area consists of approximately 18.8 acres of developed or disturbed lands lacking wildlife habitat. The remaining 6.7 acres contains low-quality habitat (Appendix B – Map 8) on primarily dry, open grassland dominated by cheatgrass and crested wheatgrass, with 5 percent or less shrub cover consisting of grey rabbitbrush.

The Project area may include limited habitat for a range of native and non-native migratory birds, resident birds, mammals, and reptiles. Wildlife populations that are the most documented and understood include those that are listed for protection under the ESA, are a state species of concern, or are desired game or furbearers.

Environmental Consequences

No Action Alternative: There would be no ground-disturbing activities; therefore, there would be no impact to wildlife habitat over the short and long term for this alternative.

Full Hatchery Build-out Alternative: This alternative would permanently remove approximately 6.7 acres of low-quality wildlife habitat (Appendix B – Map 8). Wildlife species, if present, may be permanently disturbed and displaced to adjacent habitats. Impacts to wildlife and habitat would be minor over the short and long term, based on proximity to developed areas, low-quality habitat conditions lacking cover, and abundant better-quality habitat to the northeast in the Klamath Hills.

4.3.3 Special Status Animal Species

Affected Environment

The ESA was established to protect endangered and threatened species and their habitats. Section 7 of the ESA requires that federal agencies ensure that federal actions do not jeopardize the existence of any listed species. Oregon Department of Fish and Wildlife (ODFW) maintains a list of wildlife species that are included on state or federal threatened and endangered lists, or are a state special concern species, per the Oregon Sensitive Species Rule (OAR 635-100-0400). The Oregon Sensitive Species Rule does not impose restrictions on land use or other activities (ODFW 2019).

Based on the species lists from Oregon Department of Fish and Wildlife (ODFW; 2019), USFWS Information for Planning and Consultation (IPaC) database (USFWS 2020b), USFWS ESA species county report (USFWS 2020c), and Oregon-listed plants by county (State of Oregon 2020), 57 state special status species and ESA-listed species in were identified for the region and/or county (see Appendix C – Summary of Special Status Species Table). Of the 57 species that include mammals, birds, fish, crustaceans, amphibians, reptiles, and plants, five were identified with a potential to occur in the Project area. These include state sensitive species California myotis (*Myotis californicus*), pallid bat (*Antrozous pallidus*), and Swainson's hawk (*Buteo swainsoni*), and ESA-listed shortnose sucker (*Chasmistes brevirostris*) and Lost River sucker (*Deltistes luxatus*). Information and potential occurrence of the species within the Project area are described below.

California myotis (*Myotis californicus*)

California myotis are dark brown to blond bats with dark ears and are listed as a state sensitive species in Oregon. They occur in various habitats, including sea coasts, desert scrub, oak-juniper woodlands, montane and humid coastal forests, mountain meadows, canyons, riparian woodlands, grasslands, rural residential areas, and towns (NatureServe Explorer 2020). They roost by day in crevices, including rock fissures, tree cavities, spaces behind loose tree bark, and nooks in bridges and buildings. They hibernate in caves, mines, tunnels, or buildings (NatureServe Explorer 2020). Foraging occurs at night over meadows/grassland, shrubland, and wooded area; over water; and around street lights (NatureServe Explorer 2020). Habitat for the species is available in the Project area for roosting, hibernating, and foraging, and there is potential for the species to be present.

Pallid bat (*Antrozous pallidus*)

California myotis are large, pale bats with big ears and are listed as a state sensitive species in Oregon. They occur in mountainous areas, intermontane basins, lowland desert scrub, and arid deserts and grasslands (NatureServe Explorer 2020). Day roosts include crevices of rock outcrops, caves, mine tunnels, buildings, bridges, and hollows of life and dead trees (NatureServe Explorer 2020). Night roosts in Oregon are typically in buildings, under rock overhangs, and under bridges (NatureServe Explorer 2020). Hibernation occurs in caves and mines. Foraging occurs over meadows/grassland, shrubland, and wooded area; over water; and around street lights (NatureServe Explorer 2020). Habitat is available in the Project area for roosting, hibernating, and foraging. The bats emerge late at night and feed primarily on the ground, eating large beetles, crickets, and even scorpions (ODFW 2020). Habitat for the species is available in the Project area for roosting, hibernating, and foraging, and there is potential for the species to be present.

Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawks are listed as a state sensitive species in Oregon. They winter primarily in the southern United States, migrating to breeding grounds in the spring and returning to wintering grounds in August and September (NatureServe Explorer 2020). They nest typically in solitary trees, bushes, or small groves (NatureServe Explorer 2020). East of the Cascades, the hawk breeds in the bunchgrass prairies, with the highest concentration in the foothills of the Blue and Wallowa Mountains (ODFW 2020). The species feeds primarily on mammals during the breading season and invertebrates, especially crickets and grasshoppers, for non-breeders during summer (NatureServe Explorer 2020). Nesting habitat for the species is not present on-site, but there are several observations of the species within 1 mile of the Project area (eBird 2020) and there is potential for the species to be present on-site while foraging.

Shortnose Sucker (*Chasmistes brevirostris*) and Lost River Sucker (*Deltistes luxatus*)
The ESA-listed endangered shortnose sucker and Lost River sucker are two closely related fish species that occur in the lakes of the upper Klamath Basin in central southern Oregon and northern California (USFWS 2019a). The fish historically used all major tributaries to the lakes for spawning and rearing (USFWS 2019a). The species are obligate lake dwellers and typically only leave lakes during spawning migrations, which occur from late February through mid-June (USFWS 2019a). Designated Critical Habitat (DCH) has been established for both species. The Project area does not contain natural habitat for both fish species and is outside of the DCH. However, the on-site fish hatchery is currently raising both fish species as part of the KBSARP. Therefore, the species are present within fish culture ponds on the hatchery property.

Environmental Consequences

No Action Alternative: There would be no change from existing conditions that would impact sensitive species for this alternative; therefore, no impact is expected over the short and long term.

Full Hatchery Build-out Alternative: This alternative would remove and replace existing buildings and ponds on-site and develop existing grassland areas. Potential foraging habitat for bat species and Swainson's hawks would be modified, and potential bat roosting/hibernating habitat consisting of on-site buildings would be demolished. During construction, Swainson's hawks may be deterred from using the site for foraging due to increased activity and noise and would experience minor impacts over the short term, if the species are present. Because bats forage at night, construction activities during the day are not expected to impact nightly bat foraging. Areas of disturbance would be surveyed by a qualified biologist prior to the commencement of work. If sensitive bat species are found during surveys, relocation of the species would be performed. Therefore, impacts to sensitive bat species would be minor over the short term, if the species were found to be present. Long-term impacts are expected to be negligible to Swainson's hawks or bats from Project actions since there would be no changes to hatchery infrastructure, and heavy-duty construction equipment would not be present.

An Intra-Service Biological Assessment (BA) was completed to comply with Section 7 of the ESA and is included in Appendix A. It was concluded on September 3, 2020 that there would be No Effect to the following USFWS-listed plant and animal species: bull trout, Oregon spotted frog, vernal pool tadpole shrimp, Canada lynx, gray wolf, North American wolverine, northern spotted owl, yellow-billed cuckoo, Applegate's milk-vetch, Greens tuctoria, slender Orcutt grass, and whitebark pine. The USFWS concluded that the proposed Project May Affect but is Not Likely to Adversely Affect the following ESA-listed species: Lost River sucker and shortnose sucker.

4.3.4 Invasive Animal Species

Affected Environment

Fish hatchery facilities have the potential to introduce invasive species, including bacteria, into the hatchery, spread them to other hatcheries and/or into the environment, or pass them into downstream surface waters from effluent discharge. Disease concerns at the existing hatchery are minimal, based on previous experimentation and the use of geothermal water for hatchery operations. The existing water source for the

hatchery is from a geothermal well, which has water temperatures that reduce the risk of certain parasites and allow for non-chemical treatment for some diseases.

Some external infections have been problematic at the hatchery, including *Ichthyopthirius* and *Ichthyobodo* infection during culture, and *Lernaea* spp. infection with salvage fish. These infections were easily treatable with formalin treatment and/or addition of rock salt. The potential for spread of invasive species through KBSARP activities include possible collection of larvae of non-native fish species, such as fathead minnow (*Pimephales promelas*) and yellow perch (*Perca flavescens*) or non-native snails, such as the European ear snail (*Radix aricularia*). These species are widely distributed throughout portions of the upper Klamath Basin.

Environmental Consequences

No Action Alternative: There would be no change from existing conditions that would impact invasive animal species for this alternative; therefore, no impact is expected over the short and long term.

Full Hatchery Build-out Alternative: The operation of the hatchery would require the increased use of infection treatment due to the increase in numbers of fish on-site, but the construction of the hatchery would not require any additional infection treatment. The increased number of fish on-site would also attract additional invasive animal species that prey on fish. Through the implementation of netting and pond segregation to the open environment, invasive animal species are not expected to inhabit the site in greater numbers than in current conditions, and impacts would be minor over the short and long term.

4.3.5 Migratory Birds/Bald and Golden Eagles

Affected Environment

Migratory birds are afforded protection under authority of the Migratory Bird Treaty Act (MBTA; 16 U.S.C 703-712). Under the MBTA, it is unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs. “Take” is defined as any attempt or success at pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting. Migratory Bird Permits must be obtained through the USFWS Migratory Bird Permit Office for any requested waiver or exception to the MBTA. USFWS also maintains a list of Migratory Birds of Conservation Concern (MBCC), which are migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (USFWS 2008). MBCCs and other migratory birds have the potential to occur within the Project area (see Appendix C – Summary of Special Status Species Table).

Bald eagles are afforded particular protection under two separate Acts of Congress, the MBTA (16 U.S.C. 703-712) and the Eagle Protection Act (16 U.S.C. 668), that provide specific protection for bald and golden eagles. The acts make it illegal to take, possess, sell, purchase, barter, or transport any bald or golden eagle, alive or dead, or any part, nest, or egg thereof. “Take” includes pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing.

Bald eagles inhabit areas near water bodies, including estuaries, lakes, reservoirs, rivers, and seacoasts. They require tall trees for nesting and spotting prey. Bald eagles feed primarily on fish but also feed on

waterfowl, turtles, rabbits, snakes, and other small animals and carrion (USFWS 2007a). Every year, more than 500 bald eagles migrate from their home in Alaska to feeding areas within southern Oregon and northern California, including the Lower Klamath National Wildlife Refuge (Cornell Lab of Ornithology 2020), which is located approximately 3.4 miles south of the Project area. There are several observations of bald eagles within 1 mile of the Project area (eBird 2020), and they could be present on-site for foraging.

Golden eagles inhabit many areas from forest to desert. They nest on cliffs or in the largest trees of forested stands, but do not generally nest in densely forested areas. The eagles are aerial predators and feed on small to mid-sized reptiles, birds, and mammals up to the size of mule deer fawns and coyote pups (USFWS 2011). Golden eagles are common residents year-round in all Oregon counties east of the Cascade Mountains and prefer foraging in areas with an open shrub component (ODFW 2020). There is no nesting habitat within the Project area, but foraging habitat is present. There are several observations of golden eagles within 1 mile of the Project area (eBird 2020) and they could be present on-site for foraging.

Environmental Consequences

No Action Alternative: There would be no ground-disturbing or construction related activities for this alternative; therefore, there would be no impact to migratory birds, bald eagles, or golden eagles over the short and long term.

Full Hatchery Build-out Alternative: Migratory birds, bald eagles, and golden eagles, if present, may be disturbed and displaced to adjacent habitats over the short term during construction. Construction activities would occur during the nesting season for various migratory bird species. If construction activities occur during migratory bird breeding/nesting periods (March through August), the Project area (and immediate surrounding habitats) would be surveyed by a qualified biologist for active nests no more than 5 days prior to the commencement of work. If active nests were found during surveys, spatial buffers would be established around such, as necessary, in coordination with USFWS. Construction activities within the buffer areas would be prohibited until a qualified biologist confirmed that all nests are no longer active. Impacts of this alternative to migratory birds/bald eagles/golden eagles and associated habitat would be minor over the short term since there is abundant suitable habitat in the surrounding area. Impacts over the long term are expected to be negligible as there would be no suitable habitat for migratory birds constructed and bald and golden eagles are not typically attracted to netted pond environments such as a hatchery facility. However, there are no known nesting sites within the standard USFWS buffer of 660 feet for bald and golden eagles (USFWS 2007b).

4.4 Human Environment

4.4.1 Historic Properties / Cultural Resources

Affected Environment

A historic properties and cultural resources survey was conducted in the Project area, and no historic properties were identified. One pre-contact isolated find was documented within the Project area, which is not eligible for listing in the National Register of Historic Places (NRHP). It was concluded that historic or prehistoric resources eligible for listing in the NRHP are not located in the Project area, the Project will

likely have no effect on significant archeological objects or sites, and it is recommended the Project proceed as planned (WCE 2020). USFWS consulted with the State Historic Preservation Office (SHPO) to comply with Section 106 of the National Historic Preservation Act of 1966 (NHPA), and SHPO concurred with the determination on October 13, 2020 (Appendix A).

Environmental Consequences

No Action Alternative: There would be no impact to historic properties or cultural resources for this alternative over the short and long term, as there would be no additional ground-disturbing or structure-altering activities in the Project area.

Full Hatchery Build-out Alternative: There are no historic properties identified in the Project area, and the one cultural resource isolated find is not eligible for listing in the NRHP. It is expected that there would be no impact to historic properties and cultural resources over the short and long term.

In the unlikely event that previously unidentified cultural resources are discovered as a result of this Project, construction activities will cease and the USFWS regional archaeologist will be notified and consulted on how to proceed. Work may not continue in the area of the discovery until USFWS issues a notice to proceed.

4.4.2 Hazardous Materials

Affected Environment

Hazardous and solid wastes include any liquid, solid, gas, or sludge that poses a hazard to human health or the environment because of its quantity, concentration, or physical or chemical characteristics. A review of hazardous or solid waste sites in the vicinity of the Project area was performed through the ODEQ facility mapper (ODEQ 2020b). No environmental cleanup sites, hazardous waste sites, solid waste sites, or underground/above-ground storage tanks were located in or adjoining the Project area. The existing hatchery on-site uses chemicals in operations typically consisting of formalin, salt, iodine, various chemical reagents for water quality analysis, gasoline, and two-stroke engine oil.

Environmental Consequences

No Action Alternative: Hazardous materials would continue to be stored and used at the hatchery for this alternative; however, impacts are expected to be negligible over the short and long term through the implementation of proper BMPs and handling procedures.

Full Hatchery Build-out Alternative: This alternative would include construction of a new chemical storage shed. The same chemicals used and stored on-site currently would continue to be used but would be stored in the new chemical storage shed in larger quantities. Chemicals would be stored in compliance with all federal, state, and local laws and regulations pertaining to pollution and contamination of the environment. Thus, impacts from hazardous materials are expected to be negligible over the long term.

There is the potential impact to the environment from the release of a hazardous material brought on-site during construction activities. Contractors would comply with all federal, state, and local laws and

regulations pertaining to pollution and contamination of the environment to prevent pollution by hazardous materials. Construction activities are not expected to result in the release of hazardous materials, based on adherence to applicable laws and regulations; therefore, impacts would be negligible over the short term with the proper implementation of BMPs during construction.

4.4.3 Noise

Affected Environment

Applicable noise laws for the Project area are provided in the Noise Control Act of 1972 (42 U.S.C. 4901 et seq.), amended by the Quiet Communities Act of 1978 (42 U.S.C. 4913), which promotes the development of state and local noise control programs. Oregon Code of Ordinances (Chapter 93. Noise) also includes regulations regarding noise.

Ambient noise in the Project area has not been measured, and therefore no baseline is available. The Project area adjoins a roadway and agricultural areas. Generally, there is an abundance of noise sources in the area produced from vehicle traffic, agricultural users, and hatchery operations. Noise-sensitive receptors are those facilities, land areas, or wildlife populations that require lower noise levels for health and function. Examples include residential neighborhoods, medical facilities, schools, churches, research facilities, parks, and open space. The Project area is not located near densely populated or developed areas, although four residential homes are located within a half mile of the Project Area. Wildlife species present would be sensitive to noise.

Environmental Consequences

No Action Alternative: Existing operations include the use of light-duty equipment at the hatchery. There would be no change in noise for this alternative; therefore, impacts would be negligible over the short and long term, since there is existing ambient noise from agricultural activities surrounding the Project area.

Full Hatchery Build-out Alternative: During construction activities, noise could be generated that would constitute a nuisance to nearby residential parcels through the use of diesel engines, back-up alarms, and increased traffic to the Project area. The Project area is in an agricultural setting and heavy equipment noise is common in this environment. Construction equipment will be outfitted with noise dampening measures and limited to daylight hours of operation. Impacts from increased construction related noise are expected to be minor over the short term and not much louder than existing agricultural noise conditions in the area. Impacts would be negligible over the long term since there is existing ambient noise from agricultural activities surrounding the Project area.

4.5 Cumulative Impacts

As defined by NEPA regulations (40 Code of Federal Regulations [CFR] 1508.7), cumulative effects result from the incremental effects of the alternatives actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. For purposes of this analysis, past, present, and reasonably foreseeable future actions are defined as follows:

- Past actions include activities that were associated with past actions and may involve present operations.
- Present actions include activities that may just have been completed, are currently underway, or are planned for the near future.
- Reasonably foreseeable future actions include private or public projects already funded, permitted, or under regulatory review, or included in an approved final planning document.

The following past, present, and reasonably foreseeable future actions within the Project vicinity were identified and included in the cumulative impacts analysis.

- Past construction of the private Gone Fishing Hatchery.
- Present USFWS operation of the KBSARP.
- Past and present agricultural operations on lands adjoining portions of the Project area, which include cultivated agricultural areas or greenhouse facilities. Practices include routine disturbance activities for tilling, plowing, planting, and harvesting. These activities are part of past, present, and reasonably foreseeable future actions in and around the Project area.

4.5.1 Resource Cumulative Impacts

No Action Alternative: Cumulative impacts to all resources from the No Action Alternative analyzed in this EA would be negligible over the short and long term. The No Action Alternative is not expected to have a measurable permanent impact to any of the resources analyzed when added to impacts associated with other known actions occurring in the past, present, or reasonably foreseeable future.

Full Hatchery Build-out Alternative: Similar to the No Action Alternative, this alternative would have negligible impacts over the long term to all resources analyzed in this EA. Cumulative minor impacts could occur to resources (soil and erosion, surface water quality, air quality, noxious weeds and invasive plant species, wildlife habitat, special status animal species, migratory birds, bald and golden eagles, and noise) over the short term during construction, if construction of other unidentified projects occur at the same time adjacent to the Project area.

SECTION 5
CONSULTATION, COORDINATION, AND PUBLIC INVOLVEMENT

5.1 Consultation and Coordination

Consultation and coordination performed with agencies, individuals, and organizations for the Project is summarized below.

5.1.1 U.S. Fish and Wildlife Service

Section 7 of the ESA requires that federal agencies ensure federal actions do not jeopardize the existence of any listed species. An Intra-Service BA has been completed by USFWS to comply with Section 7 of the ESA and concluded that there would be No Effect to the following USFWS-listed plant and animal species: bull trout, Oregon spotted frog, vernal pool tadpole shrimp, Canada lynx, gray wolf, North American wolverine, northern spotted owl, yellow-billed cuckoo, Applegate's milk-vetch, Greens tuctoria, slender Orcutt grass, and whitebark pine. The USFWS concluded that the proposed Project May Affect but is Not Likely to Adversely Affect the following ESA-listed species: Lost River sucker and shortnose sucker. The BA was signed on September 3, 2020, and is attached in Appendix A.

5.1.2 Oregon State Historic Preservation Office

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on cultural resources and historic properties and afford the SHPO a reasonable opportunity to comment. To comply with Section 106 of the NHPA, a cultural resource inventory and report (WCE 2020) was completed and concluded that historic or prehistoric resources eligible for listing in the NRHP are not located in the Project area, the Project will likely have no effect on significant archeological objects or sites, and it is recommended the Project proceed as planned. The Cultural Resources Inventory Report was submitted to SHPO for concurrence with the determination and SHPO concurrence was received on October 13, 2020 (Appendix A).

In the unlikely event that previously unidentified cultural resources are discovered as a result of this Project, construction activities will cease and the USFWS regional archaeologist will be notified and consulted on how to proceed. Work may not continue in the area of the discovery until USFWS issues a notice to proceed.

5.1.3 Tribal

Executive Order (EO) 13175 requires federal agencies to consult with Indian tribal governments for actions that may have tribal implications. To comply with EO 13175, the USFWS sent tribal consultation memos via e-mail and USPS to the cultural resources staff of the Burns Paiute Tribe, Klamath Tribes, Fort Bidwell Indian Community, and Modoc Tribe of Oklahoma (Appendix A). The memo included a description of the undertaking and APE, as well as Project maps.

A response was received from the Klamath Tribes (Klamath-Modoc-Yahooskin) requesting to review a draft of the cultural resource report and to arrange a site visit when COVID-19 restrictions allow. No immediate concerns regarding the Project were expressed. The initial draft of the cultural resource report was sent to the Klamath Tribes for review on July 28, 2020 and returned on August 3, 2020. The Klamath Tribes were invited to comment on the Project during the Draft EA review and comment period and their response is provided in Appendix A.

5.1.4 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction over work in waters of the U.S. under Section 404 of the Clean Water Act. The USACE was invited to comment on the Project during the Draft EA review and comment period. At the issuance of this Final EA, no comments had been received from the USACE. USFWS will coordinate with USACE regarding permitting requirements for the Project and obtain any required permits prior to the start of construction.

5.1.5 State of Oregon

The State of Oregon was invited to comment on the Project during the Draft EA review and comment period. At the issuance of this Final EA, no comments had been received from the State of Oregon. USFWS will coordinate with the ODEQ to determine if a NPDES permit is required for hatchery operations. If a permit is required, all permit coordination will be completed prior to the start of construction or hatchery operations (as applicable).

5.1.6 Stakeholders

The private owner (landowner) of the Gone Fishing Hatchery is coordinating with the USFWS to establish a 30-year lease agreement for the Project area to construct and operate the Klamath Falls National Fish Hatchery. This lease agreement would be finalized prior to the start of construction.

The U.S. Bureau of Reclamation (USBOR) has an interest in recovery efforts for shortnose suckers and Lost River suckers and has provided, and continues to provide, funding for current operations. USBOR was invited to comment on the Project during the Draft EA review and comment period and their comments are provided in Appendix A.

5.2 Public Involvement

The main goal of public participation is to involve a diverse group of public and government agency participants to solicit input and provide timely information throughout the NEPA review process. As part of the public participation process, this EA seeks to meaningfully engage minority, low-income, and traditionally under-represented populations during the NEPA review process.

5.2.1 Draft Environmental Assessment

The Draft EA was available for public/agency/organization review from September 14 through September 28, 2020 and a notice of availability (NOA) was announced through newspaper publication, mailings,

flyers, emails, and any other communication methods deemed appropriate. An electronic copy was available for download on the Project website. A summary of the NOA announcements is located in Appendix C.

The public/agencies/organizations were invited to comment on the Project during a 14-day open comment period. Written comments could have been submitted via mail, e-mail, or facsimile, and oral comments could have been submitted via phone. Comments received by the close of the comment period were considered in preparing this Final EA. A total of nine comments on the Draft EA were received during the comment period and the Draft EA comment-response matrix is located in Appendix A. Only comments that were addressed in the Final EA are included in this comment-response matrix. A record of all comments received is kept on file at the Klamath Falls Fish and Wildlife Office.

5.2.2 Final Environmental Assessment

A public NOA of the Final Plan-EA was published locally to notify the public/agencies/organizations of the finding and copies were made available on the Project website.

SECTION 6
LIST OF PREPARERS

6.1 List of Preparers

Table 6-1. List of Preparers

Name Title	Title	Organization
Jessica Peters	NEPA Specialist	McMillen Jacobs Associates
Bobbi Preite	Senior Natural Resources Consultant	McMillen Jacobs Associates
Greg Allington	Senior Biologist	McMillen Jacobs Associates
Mark Yost	Hatchery Manager	USFWS
Jennie M. Land	Project Manager	USFWS
John Robles	Fish and Wildlife Biologist	USFWS
Josh Rasmussen	Klamath Sucker Program Coordinator	USFWS
Spencer Lodge	Archaeologist	USFWS

SECTION 7
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APPENDIX A

CONSULTATON AND COORDINATION

Draft EA Comments-Response Matrix

U.S Fish and Wildlife Service (USFWS)

State Historic Preservation Office (SHPO)

Tribal

U.S. Army Corps of Engineers (USACE)

State of Oregon

Stakeholders

Draft EA Comments-Response Matrix

DRAFT EA COMMENT-RESPONSE MATRIX

Klamath Falls National Fish Hatchery Project

Note: Only comments that were addressed in the Final EA are included in this comment-response matrix. A record of all comments received is kept on file at the Klamath Falls Fish and Wildlife Office.

Comment/Concern	Response/Correction
"…Following construction, my concerns are that the operations of the hatchery will take into account the following: 1. Noise: operational installations with water pumps, ventilation units, power generators, or other equipment will be designed to be covered, insulated, and shielded to dampen noise. 2. Lighting: should be shielded and downcast to prevent light pollution. Night-time lighting designed to be turned on only during operational necessities. No continuous area lighting please. 3. Water use: re-injection wells to inject water back into existing water table should be considered to maintain all water resource levels. 4. Net-zero power: the project should include federal support for solar or geothermal power generation to net-zero on-site power use for water pumps, lighting, and ventilation. 5. Weed abatement: Noxious weeds should continue to be controlled to prevent spread to adjacent properties. My adjacent property is certified organic farmland. During construction and after- please consider fire safety. Storage of fuels, chemicals, operation of equipment, sparks from routine construction activity, need careful monitoring…"	1. Noise: the project design will take into account noise dampening measures during construction (Section 4.4.3) as well as during operation of the hatchery. The final project design will take into account permanently operating measures that may produce noise and they may be outfitted with decibel reduction measures. 2. Lighting: construction activities will be limited to daylight hours. The final project design will take into account light dampening measures so that light pollution during operation is not directed at adjacent property owners and toward the ground from buildings for security purposes. Ponds will not have any lighting measures. 3. Water use: the project design is not proposing to inject water back into the aquifer as part of this project. 4. Net-zero power: Energy efficient devices will be installed as part of the hatchery design and operation. Energy reduction power options are not part of this project and may be explored during subsequent phases of the project and would comply with federal and state energy consumption regulations. 5. Weed abatement: the project design will take into account weed abatement measures which include the development of a weed management plan (Section 4.3.1). The project design will take into account fire safety measures during and post construction which include storage cabinets to meet federal, state, and local regulations (Section 4.4.2).
"Herring, native salmon and Suckers and things for all to eat. Focus on genetics greatly as well as with the salmon. Only brood native strains endemic to the klamath unless extinct!"	The project is focused on collecting and raising native shortnose and Lost River suckers endemic to the Klamath Basin (Section 1.3.2).
"…1. You need to make sure that you have the ability to reuse the water, you only have a 300 gal per minute water right so refilling these ponds you may need to reuse some of the water. As I under stand it there is no reuse been considered, but if you put in pipes from your settling ponds to your head ponds if you need water all you have to do is put on a pump. You will already be	The project design does not include reusing water from the settling ponds. Hatchery water re-use may be explored during subsequent phases of the project and would comply with federal and state regulations.

Comment/Concern	Response/Correction
putting pipes down from the ponds so the added cost will be small compared to doing it later…"	
"…2. Your tail water drains down though my property in to a settling pond of mine than to Klamath Drainage District water works. I believe it would be a good idea to get a easement through the property with some kind of agreement on maintaining the pipe line. This property is being considered for sale and the next land owners may not want your water going through there property, If you have a easement they have no argument…"	USFWS may explore easement opportunities for the pipeline during subsequent phases of the project.
"…The only concern we have on the EA is the increased hatchery effluent will go into a series of settling ponds, but ultimately be discharged into the canals and drains of the Klamath Drainage District (KDD). We ask that KDD's Manager be fully informed in the process and that the Service ensure that KDD not incur any costs or regulatory obligations for any impacts on water quality that are a result of these operations…"	USFWS is coordinating with the Oregon Department of Environmental Quality regarding requirements for a National Pollutant Discharge Elimination System permit. Water being discharged from the hatchery will comply with federal, state, and local water quality regulations and any applicable permits will be obtained prior to the start of hatchery operations (Section 2.1.5). The project team will coordinate with the KDD Manager regarding the results of coordination with federal, state, and local agencies.
"…In reviewing the Draft Environmental Assessment, it is clear that continuing to increase Upper Klamath Lake levels over the past 20 years in hopes of improving recruitment and propagation of suckers has largely failed. Both the National Academy of Sciences and Dave Vogel, former scientific consultant for the Klamath Water Users Association, outlined the ineffectiveness of increasing Upper Klamath Lake levels to address sucker decline years ago, but their findings had little impact on lake management. This Draft Environmental Assessment appears to validate their science and largely take a different approach to sucker management through construction and operation of the hatchery…"	There are no modifications proposed to Upper Klamath Lake levels as part of this project (Section 3.2.2).
"…As part of the hatchery operations it is vital to introduce suckers to Upper Klamath Lake at an age and size that leaves them less vulnerable to predation. It would also be beneficial to consider predation management, especially on species not native to Upper Klamath Lake that are annihilating native sucker species…"	USFWS is proposing to introduce fish into their wild habitat as appropriate life stages for maximum survival. These life stages include target length of 200 to 300 mm and this length will be evaluated during the course of recovery efforts (Section 1.3.2). There are no plans to implement non-native species management in Upper Klamath Lake as part of this project (Section 3.2.2).
"Page 3, Section 1.4.2 and throughout the document: [referencing the text, "USFWS have successfully propagated shortnose suckers…"] Can you clarify? In this context, does "propagate" mean raise from collected larvae, or mix eggs and milt from adult suckers and hatch fertilized eggs, or both?"	Existing propagation measures include to collect wild larvae and juvenile suckers to cultural them to the desired survival length (Section 1.4.2). Proposed propagation measures for hatchery operations include collection of larvae and juvenile suckers as well as hatchery fertilization of eggs with milt to meet the purpose and need (Section 3.2.2).
"Page 10, Section 3.2.2: Maybe I missed it but what is the difference between "extended salvage" fish and salvage fish? It'd be helpful if all these types of fish were more explicitly defined."	Extended salvage refers to fish rescued from entrainments that are kept at the new hatchery facility for long periods of time until they reach a mature size that will reduce the chance for mortality in the wild. It also refers to holding fish at the new hatchery facility

Comment/Concern	Response/Correction
	until the appropriate time of year to release them back into the wild (Section 1.3.2).
"Page 10-11, Section 3.2.2: Is USFWS considering to include other parties (state, tribal,…) in development of the long term operations and maintenance plan?"	USFWS will develop the plan internally and provide to partners for a review prior to the start of hatchery operations (Section 3.2.2).
"Page 19, Section 4.2.4: [referencing the text, "There is currently no indication of water-level decline or depletion for this aquifer (Gannett et al. 2007)"] Has this been assessed again in the last 13 years? Has the amount of water pumped increased since the development of the Gone Fishing Hatchery? 13 years seems like a long time ago for this type of analysis."	The 2007 report is latest available public information pertaining to the applicable aquifer (Section 4.2.4).
"[In Summary of Special Status Species table] For Fringed Myotis, Typo, should be "S" instead of "oS""	Typo corrected (Appendix C).

U.S. Fish and Wildlife Service
(USFWS)

Klamath Falls Fish and Wildlife Office

Intra-Service Section 7 Biological Evaluation Assessment

I. Project Location: 3875 Lower Klamath Lake Road, Klamath Falls, Oregon 97603

A. County where the project will occur: Klamath County, Oregon

B. Brief description of project area (include map): The project is located at 3875 Lower Klamath Lake Road near the town of Merrill, approximately 3.2 miles north of the Oregon-California State line and 10 miles south of Klamath Falls in Klamath County, Oregon (Map 1). The Klamath County Tax Parcels are 4009-02700-00102 and 4009-03400-00100. The project area is located at an existing hatchery facility (Gone Fishing Site) which the U.S. Fish and Wildlife Service (USFWS) has a partnership with the private landowner to operate the Klamath Basin Sucker Assisted Rearing Program (KBSARP) within the existing facility. A map of the Action Area is included as Map 2. The name of the project is the Klamath Falls National Fish Hatchery.

II. Species/Critical Habitat:

A. Identify the Species and associated Designated Critical Habitat or Proposed Critical Habitat that may be present in the Action Area: Species of concern were identified using the Information for Planning and Consultation (IPaC) online system (accessed June 26, 2020) and the Endangered Species Act (ESA) species by county report for Klamath County (accessed June 26, 2020). The table below identifies the ESA species and critical habitat that occur in Klamath County, and identifies if habitat or the ESA species are present within the Action Area.

Listed, Proposed and Candidate Species that May Occur within Action Area (Klamath County)

Common Name	Scientific Name	Federal Status	Species or Habitat within Project Area (Yes/No)	Proposed or Designated Critical Habitat Present in Project Area (Yes/No)	Species Potentially Affected By Project (Yes/No)
Fishes					
Bull Trout [1]	*Salvelinus confluentus*	T, CH	No	No	No
Lost River sucker [1, 2]	*Deltistes luxatus*	E, CH	Yes	No	Yes
Shortnose sucker [1, 2]	*Chasmistes brevirostris*	E, CH	Yes	No	Yes
Amphibians					
Oregon spotted frog [1]	*Rana pretiosa*	T, CH	No	No	No
Crustaceans					
Vernal pool tadpole	*Lepidurus*	E, CH	No	No	No

Common Name	Scientific Name	Federal Status	Species or Habitat within Project Area (Yes/No)	Proposed or Designated Critical Habitat Present in Project Area (Yes/No)	Species Potentially Affected By Project (Yes/No)
shrimp [1]	*packardi*				
Mammals					
Canada Lynx [1]	*Lynx canadensis*	T, CH	No	No	No
Gray wolf [1, 2]	*Canis lupus*	E, CH	Yes	No	No
North American wolverine [1, 2]	*Gulo gulo luscus*	PT	No	No	No
Birds					
Northern spotted owl [1]	*Occidentalis caurina*	T, CH	No	No	No
Yellow-billed cuckoo [1, 2]	*Coccyzus americanus*	T, PCH	No	No	No
Flowering Plants					
Applegate's milk-vetch [1, 2]	*Astragalus applegatei*	E	No	No	No
Greene's tuctoria [1]	*Tuctoria greenei*	E, CH	No	No	No
Slender Orcutt grass [1]	*Orcuttia tenuis*	T, DHC	No	No	No
Conifers & Cycads					
Whitebark pine [1]	*Pinus albicaulis*	C	No	No	No

T = Threatened, PT = Proposed Threatened, E = Endangered, CH = Critical Habitat, PCH = Proposed Critical Habitat
[1] = Klamath County List, [2] = IPaC,

III. Description of Proposed Action: Attach a description of the action(s) with sufficient detail (including duration and timing of action) that the potential effects of the action on the species and critical habitat can be identified and fully evaluated. This may be an existing document.

The proposed action includes the items listed below and depicted in Map 3 and would be completed within the Action Area extents (25.5 acres) depicted in Map 2:

Road Construction and Electrical and Plumping Lines
Gravel, paved, and dirt roads will be constructed (see schematic in Map 3). Also, the electrical delivery system to the Action Area will be upgraded to increase capacity. This may include addition of a transformer and overhead lines and poles.

Ponds
Additional ponds would be constructed in areas outside of the existing hatchery footprint. Approximately 12 acres of ponds would be constructed ranging in size from 0.007 to 1.12 acres in size with a maximum

combined volume of 1,821,000 cubic feet (42 acre-feet) to support the annual production of 60,000 shortnose suckers and Lost River suckers.

Water Distribution System

A new geothermal well would be installed (location to be determined) as a backup to the existing well and a new pump house would be constructed around the well. Only one well would be running at time and pumped water volumes would stay within the existing water rights. The holding tank would be replaced in the same general vicinity to accommodate improved groundwater tempering and water distribution across the site. The water piping distribution system and aeration system and equipment would be replaced for the new site layout.

Hatchery Building

A new hatchery building (4,000 to 7,000 sq-ft) would be constructed near the site entrance to replace the existing hatchery greenhouse. The new hatchery building would provide capacity for egg incubation, larval rearing, and salvage quarantine. It would also be equipped with restrooms, a breakroom, storage, and wet labs for water quality testing. The existing hatchery building would be demolished following the completion of the new hatchery building.

Other Buildings

A new maintenance shed (4,000 to 7,000 sq-ft) would be constructed near the new hatchery building. A new, smaller maintenance shed and a new chemical storage shed would be constructed at the southern end of the site.

Equipment and Monitoring

The mechanical and Supervisory Control, Automation, and Data Acquisition (SCADA) system supporting the site would be upgraded to stabilize the program, add reliability to the infrastructure, and mitigate any risk of mechanical failure. Video monitoring systems, including remote monitors and alarms, would be installed to reduce the risk of vandalism, personnel hazards, and water quality issues.

Site Access

A perimeter fence would be constructed around the facility and egress gates installed at select locations through the perimeter fence for personnel, as well as emergency vehicle turnaround access and accessibility around the hatchery buildings. Vehicle access into the facility would remain the same as it is currently, from the existing access driveway off Lower Klamath Lake Road.

Production Capacity

The hatchery site would be modified to increase the rearing capacity, improving the production of shortnose suckers and Lost River suckers. The capacity for extended salvage fish would increase from 510 to 2,250, capacity for broodstock would increase from 255 to 1,750, capacity for larvae incubation would increase from 40,000 to 100,000, and capacity for salvage fish from 1,500 to 2,500. The current production of juvenile rearing (2- and 3-year-old fish) would increase from 21,055 annually to 66,250 annually.

Construction Timing and Sequencing

Construction measures for the full hatchery build-out would be based on available USFWS funding and

could be implemented over the course of 30 years. Initial phasing is expected to be completed according to the sequencing listed below.

Phase 1 (implemented within the first 5 years for initial hatchery startup)

- Pond construction and new water distribution system installation. (See Map 3 for more details)
    - Influent Retention Pond
    - 1st Tier Ponds: B1, C1 – C8 (See Map 3 for more details)
- Site access roads, gates and security.

Phase 2 (implemented after Phase 1 is complete)

- New geothermal well and pump house installation.
- Pond construction and additional water distribution system installation. (See Map 3 for more details)
    - 2nd Tier Ponds: C9 – C14, D1 – D9
    - Broodstock Ponds: A1 – A6
    - Extended Salvage: A7 – A8
    - Effluent Retention Ponds: D10 – D12
    - Raceways: three
- Construction of hatchery building, solar panels, transformers and backup generators, septic system, maintenance sheds, and chemical storage shed. (See Map 3 for more details)
- Various mechanical upgrades.
- Site access roads, gates and security.

Long Term Operations and Maintenance

A long term operations and maintenance plan would be developed for the project during the final design stage of the Project and would be finalized prior to the start of construction activities. It would specifically describe how the hatchery constructed in Phases 1 and 2 would be operated and maintained within the Project area. Typical operations and maintenance activities expected during the 30-year lease agreement which are analyzed in this document including (but not limited to) water quality monitoring, feeding, draining, and cleaning of ponds; pond infrastructure maintenance and repair; pond netting maintenance and repair; water distribution system maintenance and repair; road maintenance and repair; routine invasive weed species removal; and tagging, measuring, assaying, treating, and stocking fish. As new components are constructed at the hatchery, USFWS would update the long term operations and maintenance plan to reflect these changes.

IV. Discussion of Effects: Briefly document the discussion within the Service about potential effects, including beneficial, of the project actions on the identified species and/or critical habitat:

The project site is on previously disturbed ground with little wildlife habitat, and no designated or proposed critical habitat is present. There is no natural habitat or natural known distribution within the Action Area

for the following species: bull trout, Oregon spotted frog, Vernal pool tadpole shrimp, Canada lynx, North American Wolverine, Northern spotted owl, yellow-billed cuckoo, Applegate's milk-vetch, Greene's tuctoria, slender Orcutt grass, and Whitebark pine.

The project site is located within the current range of the gray wolf and known wolf packs are documented approximately 35 miles from the Action Area. The grey wolf would not typically be found in the Action Area, but undeveloped areas nearby could be utilized by the species for hunting prey. Noise impacts during construction are not expected to detour use of the area for hunting with a 1-mile radius since current agriculture operations surrounding the site already contribute considerable amounts of noise.

There is no natural habitat or natural known distribution within the Action Area for the Lost River sucker or shortnose sucker. However, both species are present at the project site from aquaculture operations. USFWS has approved aquaculture operations for both species at the existing hatchery facility in the following documents:

- Recovery SubPermit FWSKFFWO-11, Subpermit to Take the Lost River sucker (*Deltistes luxatus*), shortnose sucker (*Chasmistes brevirostris*), Warner sucker (*Catostomus warnerensis*), bull trout (*Salvelinus confluentus*), and Oregon spotted frog (*Rana pretiosa*); and to remove/reduce to possession from Federal lands the *Astragalus applegatei* (Applegate's milk-vetch), *Orcuttia tenuis* (slender orcutt grass) and *Tuctoria greenei* (Green's tuctoria), signed March 3, 2020.
- Klamath Basin Sucker Rearing Program, Decision Memorandum on Action and for Application of: Categorical Exclusion, Klamath Falls Fish and Wildlife Office, signed September 1, 2018.
- Klamath Basin Sucker Rearing Program, NEPA Compliance Checklist, signed January 11, 2019.
- Lease Gone Fishing Property, NEPA Compliance Checklist, signed June 6, 2019.
- Net Pen Grow-Out for Suckers, Decision Memorandum on Action and for Application of: Categorical Exclusion, Klamath Falls and Wildlife Office, signed March 20, 2020.
- Net Pen Grow-Out for Suckers, NEPA Compliance Checklist, signed March 20, 2020.
- Stocking Lost River and Shortnose Suckers into Upper Klamath Lake, Decision Memorandum on Action and for Application of: Categorical Exclusion, Klamath Falls and Wildlife Office, signed March 20, 2020.
- Endangered Lost River and Shortnose Sucker Fish Stocking, NEPA Compliance Checklist, signed March 20, 2020.
- Environmental Action Statement for the Proposed Klamath Falls National Fish Hatchery, signed March 30, 2020.

Actions Covered by Other Permits

The proposed action may require the transport and handling of Lost River and shortnose suckers similar to what is described in the aquaculture operations with USFWS approvals. This additional handling would result from the construction activities proposed as part of the action. Ongoing operations occurring following construction are covered by existing approvals. The transport and handling of the species are not anticipated to negatively impact the species above and beyond what is currently performed for hatchery operations and any impacts to Lost River sucker or shortnose sucker are expected to be insignificant and discountable.

The proposed action would require the periodic collection of genetic and health samples. These may affect the condition of the individuals, or in some cases may be directly lethal to the selected individuals. However,

this was covered in a separate ESA consultation or permit processes for current operations that will continue. Furthermore, various treatments of antibiotics or other chemicals may be applied to reduce parasite loads. These medicines can be stressful for individuals, but overall the treatments provide a positive benefit to individuals and thus populations.

Stocking of individuals into natural populations can have important implications regarding genetic diversity and local ecological adaptation in receiving population, but these can be reduced through proper management strategies. Overall, stocking will provide a positive effect to the species by increasing the resiliency of natural populations.

Construction Activities Considered in this Assessment
Construction activities may affect the species through noise, sedimentation, pollution, or seismic pathways. Noise and seismic impacts could affect the behavior of individuals held on site, potentially affecting their ability to feed or utilize preferred areas in the ponds. Sedimentation and pollution may contaminate the ponds in ways that affect the health or condition of the individuals in the ponds. The proposed action will utilize best management practices for construction to minimize and mitigate the potential of these effects (i.e. dust control, moving fish to ponds farther away, etc.). Furthermore, stocking of individuals into the lake will eliminate these effects once the fish are moved offsite.

V. Recommended Determination(s) of Effect(s): For all species and critical habitat identified in the action area, mark (X) the appropriate determinations.

A. Listed, Proposed, and Candidate Species

X a) "No Effect"

List species for which this recommendation is applicable:

Bull Trout, Oregon spotted frog, Vernal pool tadpole shrimp, Canada lynx, gray wolf, North American wolverine, northern spotted owl, yellow-billed cuckoo, Applegate's milk-vetch, Greene's tuctoria, slender Orcutt grass, and Whitebark pine.

X b) "May Affect, but is Not Likely to Adversely Affect" (includes beneficial effects)

List species for which this recommendation is applicable: Lost River sucker and shortnose sucker.

__ c) "May Affect, and is Likely to Adversely Affect" (if checked, proceed with biological opinion)

List species for which this recommendation is applicable: None

B. Federally Designated and Proposed Critical Habitat

X a) "No Effect" to Critical Habitat

List critical habitat(s) for which the recommendation is applicable. Bull Trout, Lost River sucker, shortnose sucker, Oregon spotted frog, Vernal pool tadpole shrimp, Canada lynx, gray wolf, northern spotted owl, yellow-billed cuckoo, Greene's tuctoria, and slender Orcutt grass.

__ b) "May Affect, but is not likely to Adversely Affect"

List critical habitat(s) for which the recommendation is applied. None

__ c) "May Affect, and is Likely to Adversely Affect" (if checked, proceed with biological opinion)

List critical habitat(s) for which the recommendation is applied. None

VI. Signatures:

Prepared with (Project Lead Biologist):

Name/Title: Josh Rasmussen, Klamath Sucker Program Coordinator

Signature: JOSH RASMUSSEN Digitally signed by JOSH RASMUSSEN Date: 2020.09.03 16:41:31 -07'00' Date: 9/03/2020

Endorsed by (Field Supervisor for Proposing Office):

Name/Title: Daniel D. Blake, Field Supervisor, Klamath Falls Fish and Wildlife Office

Signature: DANIEL BLAKE Digitally signed by DANIEL BLAKE Date: 2020.09.03 17:03:20 -07'00' Date: 9/03/2020

Reviewed by (Biologist):

Name/Title: Christine J. Jordan, Wildlife Biologist and Section 7 Project Manager, Yreka Fish and Wildlife Office

Signature: CHRISTINE JORDAN Digitally signed by CHRISTINE JORDAN Date: 2020.09.22 16:55:32 -07'00' Date: 9/22/2020

Approved by (Field Supervisor for Review Office):

Name/Title: Jenny Ericson, Field Supervisor, Yreka Fish and Wildlife Office

Signature: JENNY ERICSON Digitally signed by JENNY ERICSON Date: 2020.09.22 17:22:13 -07'00' Date: 9/22/2020

Information on the candidate, proposed, and listed species (including life history, status in the action area, and critical habitat) as well as referenced literature can be found on the KFFWO server at I:\Restoration\Admin\Compliance\ESA Intra-Service consultation.

Prepared by:
McMillen Jacobs Associates
1471 Shoreline Drive, Suite 100 |Boise, ID 83702
208.985.1499 d | 208.342.4214 o | 208.340.5721 c

Intra-Service Consultation Effects Determination Categories

Listed Species

NE = No Effect: This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) a listed species. - No concurrence is required but is optional

NLAA = May Affect but Not Likely to Adversely Affect: This determination is appropriate when the proposed project's effects are insignificant, discountable or beneficial (see definitions) - Concurrence required

LAA = May Affect and Likely to Adversely Affect: This determination is appropriate when the proposed project effects are NOT insignificant, discountable or beneficial - Biological Opinion required

Designated Critical Habitat

NE = No Effect: This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) the primary constituent elements (see definition) of critical habitat - No concurrence is required but is optional

NLAA = Not Likely to Adversely Affect: This determination is appropriate when the proposed project effects to primary constituent elements of critical habitat are insignificant, discountable or beneficial (see definitions) - Concurrence required

LAA = Likely to Adversely Affect: This determination is appropriate when the proposed project effects to primary constituent elements of critical habitat are NOT insignificant, discountable or beneficial - Biological Opinion required

Candidate or Proposed Species

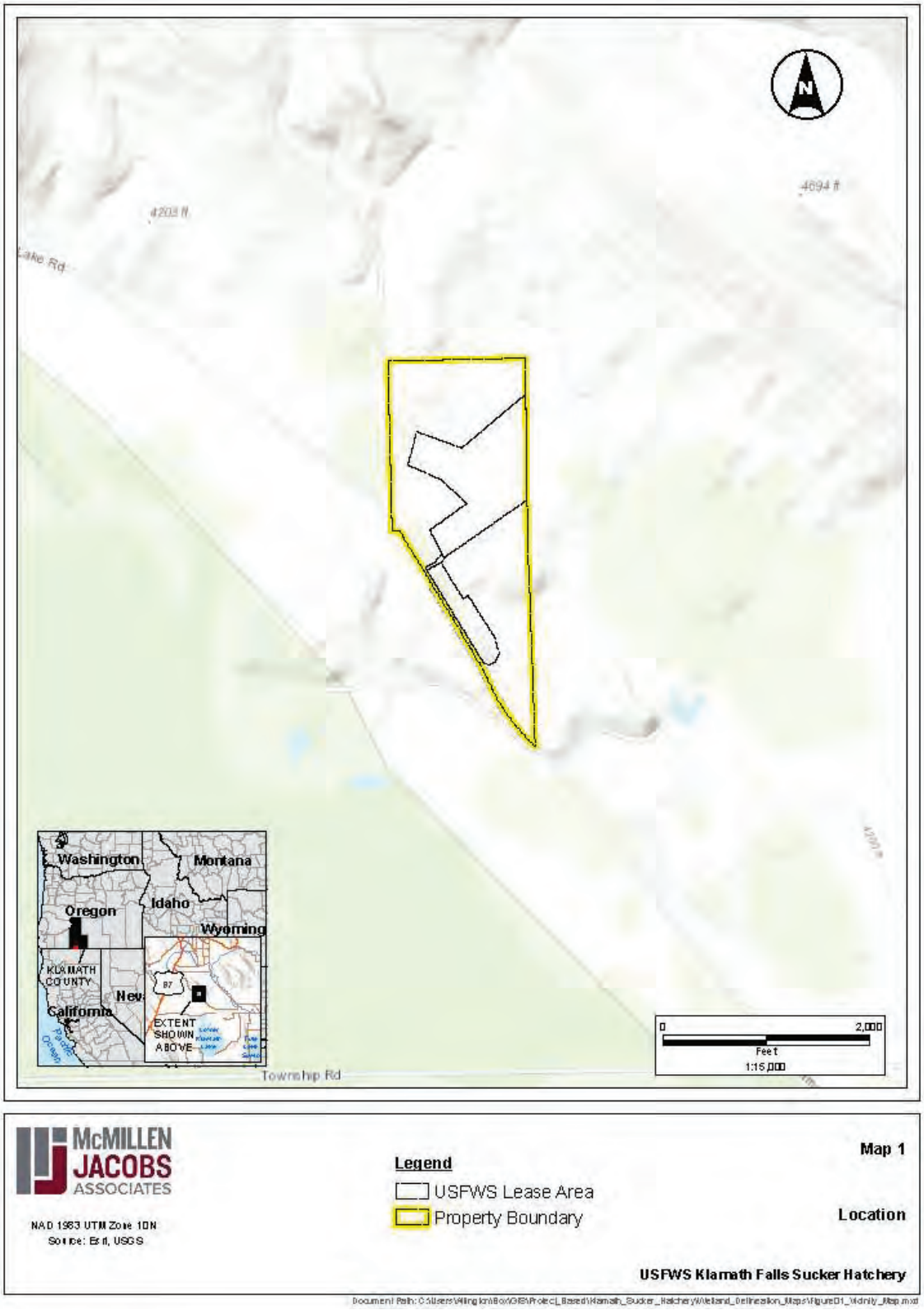
NE = No Effect: This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) a proposed or candidate species - No concurrence is required but is optional

LJ = Likely to Jeopardize: This determination is appropriate when the proposed project is reasonably expected to jeopardize the continued existence of a species proposed for listing or a candidate species - Formal conference required

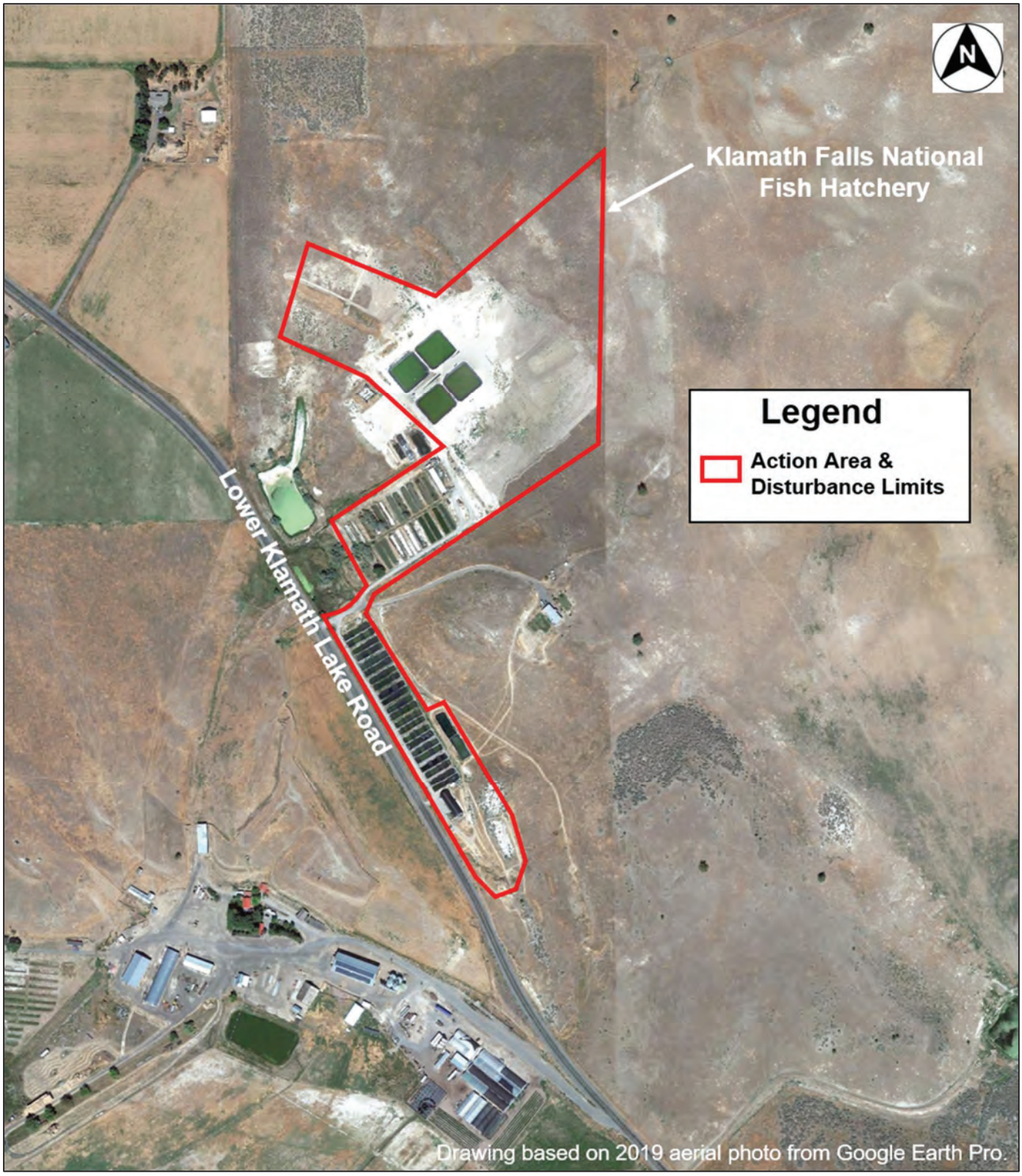
Proposed Critical Habitat

NE = No Effect: This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) proposed critical habitat - No concurrence is required but is optional

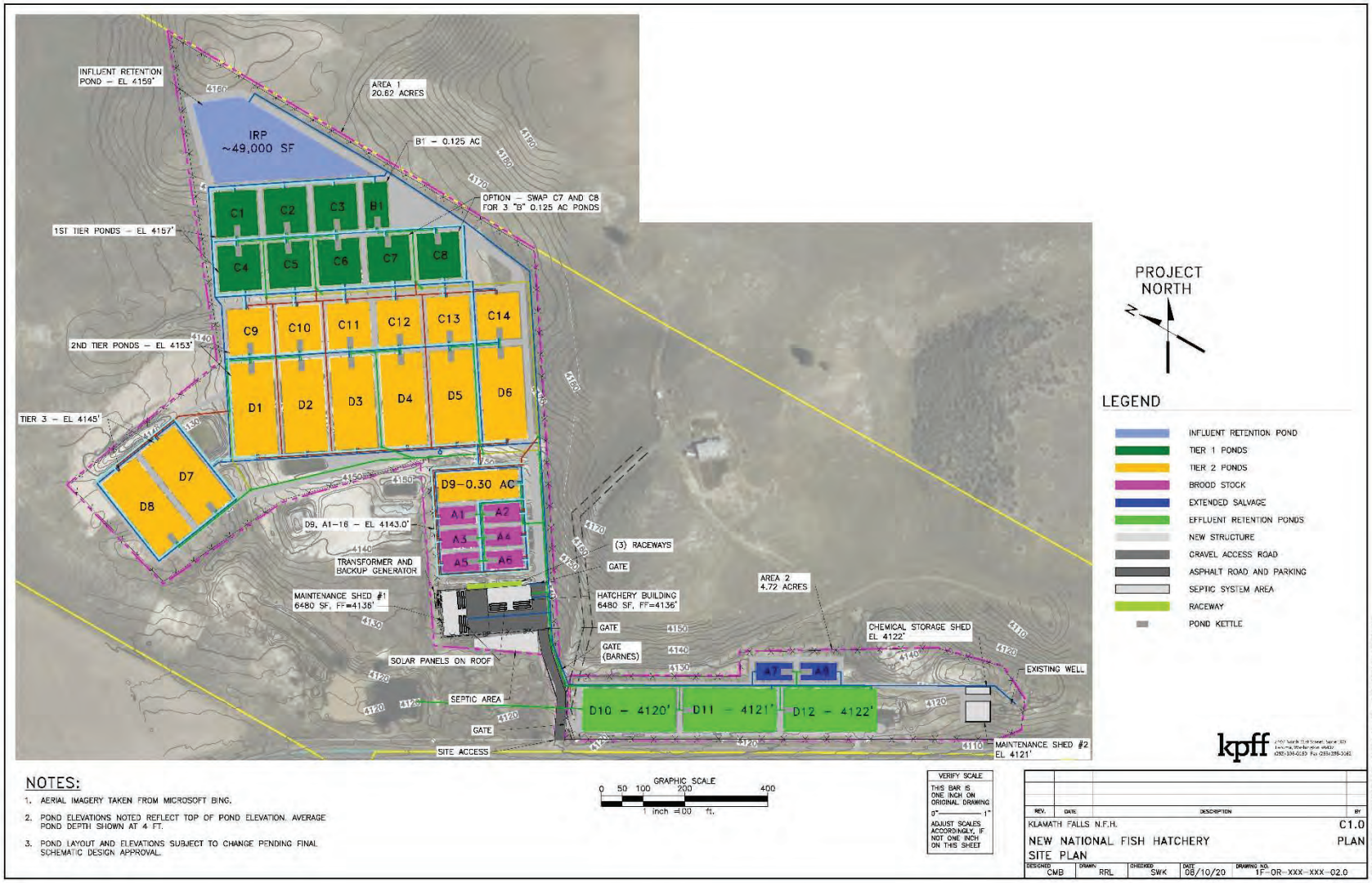
LAA = Likely to Adversely Affect: This determination is appropriate when the proposed project is likely to impact critical habitat to the degree that it no longer serves the conservation purpose it was designated for - Formal conference required



Map 1. Location Map



Map 2. Action Area Map



Map 3. Proposed Action Map

State Historic Preservation Office (SHPO)

Oregon
Kate Brown, Governor

Parks and Recreation Department
State Historic Preservation Office
725 Summer St NE Ste C
Salem, OR 97301-1266
Phone (503) 986-0690
Fax (503) 986-0793
www.oregonheritage.org

June 15, 2020

Mr. Spencer Lodge
USF&W
1936 California St
Klamath Falls, OR 97601

RE: SHPO Case No. 20-0742
USFWS Project, Klamath Falls National Fish Hatchery
Rehabilitate an existing commercial hatchery into a National Fish Hatchery
40S 9E 26, 27, 35, Klamath County

Dear Mr. Lodge:

Our office has recently received a letter from your agency requesting concurrence regarding your Area of Potential Effect (APE) boundaries for the project referenced above. Upon review of your letter/ document, we concur with the proposed project's APE boundaries. Our office looks forward to receiving a copy of the cultural resource survey report for the project once it has been completed.

Under federal and state law archaeological sites, objects, and human remains are protected on both public and private lands in Oregon. If you have not already done so, be sure to consult with all appropriate Indian tribes regarding your proposed project. If you have any questions or comments regarding this letter, please do not hesitate to contact me. In order to help us track your project accurately, please be sure to reference the SHPO case number above in all correspondence.

Sincerely,

Jamie French, M.A.
SHPO Archaeologist
(503) 986-0729
Jamie.French@oregon.gov

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Spencer Lodge, Zone Archaeologist – Klamath Basin
Interior Region 10 Cultural Resource Team
1936 California Ave., Klamath Falls, OR 97601
phone:541-885-2519, fax:541-885-7837, cell:512-757-6363
email: spencer_lodge@fws.gov

21 October 2020

To: Dan Blake, Field Supervisor – Fish and Wildlife Service
Program: Fisheries
Funding: Fisheries

From: Spencer Lodge, Zone Archaeologist – Klamath Basin

RE: Section 106 Compliance: **Klamath Falls National Fish Hatchery Project –** Klamath County, Oregon
SHPO Case No. 20-0742

Thank you for requesting our assistance meeting the responsibilities of the U.S. Fish and Wildlife (FWS) in complying with Section 106 of the National Historic Preservation Act (NHPA) for a hatchery construction project on leased private lands in Klamath County, Oregon (T40S, R9E, Sections 26, 27, 34, 35; Lost River, OR 7.5' USGS quad) (Figures 1-2).

Undertaking and Area of Potential Effect: The project will develop the site at the Klamath Falls National Fish Hatchery to annually produce 60,000 endangered Shortnose sucker and Lost River sucker for stocking into Upper Klamath Lake. This will include creation of numerous ponds ranging in size from 0.1 acre to 0.5 acre, construction of a new hatchery building, development of water movement system (including drilling a new well), and various infrastructure necessary to accomplish hatchery objectives, such as roads, piping, and electrical infrastructure, etc.

The specific design is not fully developed to date, and so the details may morph slightly. Nevertheless, the activities described below are likely to occur to some degree. The description is intended to be comprehensive to include all possible activities. We assume that the entire 25 acres will be disturbed to some degree ranging from 1 to 25 feet in depth, with the average likely being about 5 feet.

Heavy earth-moving equipment (likely metal-track) will be used to level areas throughout the entire project area. An excavator will be used to dig ponds of various depths ranging from 5-8 feet ranging in size from 0.1 – 0.5 acres. Soil removed from the excavated areas will be deposited on site in spoil piles or spread on other areas to elevate the grade. Liners will be placed in each pond using the excavator to pull the liner to cover the entire footprint. These will be embedded in the banks of the ponds with the excavator piling spoil from the disturbed areas, such as the pond footprint. Trenching will occur to bury electrical wires and/or water pipes. This will occur at a depth of 2-4 feet below the surface. A well will be drilled (likely > 100 ft deep). This will include associated pump house structures and settling/cooling tanks. Construction will include a cement slab foundation and excavation up to 10 feet deep for these associated structures.

Depending on design, numerous drain kettles will be constructed. These are cement structures approximately 20 feet wide by 100 feet long and 25 feet deep. A pipe will drain from the bottom of these structures. Construction includes excavating to a depth of 25 feet (lower for the drain pipe) and installation of cement forms and pouring of cement.

A building of approximately 5,000 square feet will be constructed on site. This will include a cement slab foundation and a potential for an associated septic tank and leach field. Poles to hold electrical and communication wires will also be buried on site to appropriate depths. Fencing to provide site security may also be included along the perimeter of the site, with poles buried to a depth of up to 3 feet.

Hand tools, including shovels and pick axes, may also be used. Once the ponds are shaped and lined, 6 ft t-posts will be driven into the substrate around the perimeter of each pond at intervals of approximately 20 ft. These will be driven to a depth of approximately 3 ft. Bird netting to prevent predation will be stretched across these to cover the ponds.

Gravel roads to access all necessary areas of the site may also be graded and compacted using heavy grading equipment.

Cultural Resource Identification Effort: The FWS contracted with Water, Civil, and Environmental, Inc. to conduct a cultural resource identification effort to determine whether any historic properties occur in the APE of the project (Mitchell, McDaniel, and Driver 2020). The identification effort included archival research and field inventory. As a result of the field identification effort, one site (35KL4867) were identified within the project area.

Site 35KL4867 was identified in a shovel test probe outside of the APE. The site is not eligible for the National Register of Historic Places and will not be impacted by the proposed undertaking.

As such, the U.S. Fish and Wildlife Service has determined the Klamath Falls National Fish Hatchery Project is a "*no adverse effects"* outcome under 36CFR800.5.b.

Tribal Consultation: Tribal consultation was initiated via email and standard mail with the cultural resources staff of the Klamath Tribes, Burns Paiute, Modoc Tribe of Oklahoma, and Fort Bidwell Indian Community of the Fort Bidwell Reservation on 18 May 2020. The memo included a description of the undertaking and APE and project maps. A response was received from the Klamath Tribes requesting a site visit when Covid-19 restrictions allow. No additional responses have been received.

SHPO Consultation: SHPO consultation was initiated via email on 18 May 2020 with a memo describing the APE and proposed identification effort. An email was received assigning the project case no. 20-0742, and a memo dated 15 June 2020 was received concurring with the definition of the APE and proposed identification effort. The completed report and a memo documenting the FWS determination of effects (DOE) was submitted to SHPO on August 31 2020. A response was received from SHPO via email on 13 October 2020 concurring that the project will likely have no effect on significant archaeological objects or sites.

Determination of Effect: Based on the scope of activities, the land use history, consultation, and the results of the field investigation, the U.S. Fish and Wildlife Service has determined that the project should be considered a "*no adverse effects*" outcome under 36CFR800.4.d.1, the implementing regulations of the NHPA Section 106. Due to the sensitive nature of the area encompassing the project area, it was determined that a cultural monitor is warranted during project implementation.

Inadvertent Discovery – The presence or absence of cultural resources can never be predicted with certainty. The project proponent will be advised that if cultural resources are discovered during implementation of the undertaking, work should cease until the FWS project coordinator and the FWS regional archaeologist are notified and an assessment is conducted. If project activities change, the regional archaeologist should be notified in order to determine whether additional fieldwork is warranted.

Reference:

Mitchel, Kelly; Sarah McDaniel and Ragan Driver
2020 Cultural Resource Inventory Report, Klamath Basin Sucker Assisted Rearing Program Gone Fishing Hatchery Project, Klamath County, OR. Report prepared for U.S. Fish and Wildlife Service.

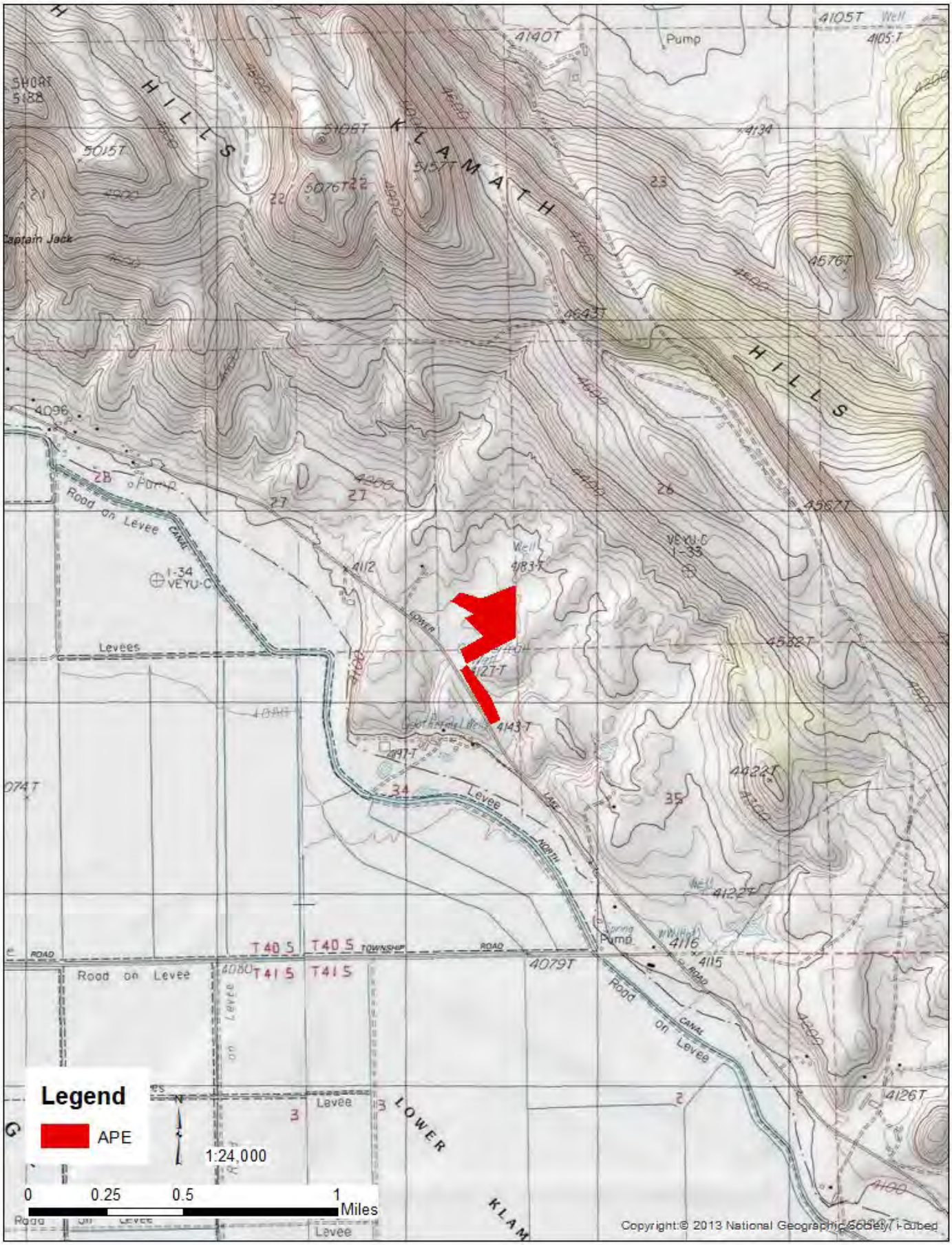


Figure 1. Location map for the Klamath Falls National Fish Hatchery Project.

Figure 2. Close-up aerial image of project boundary.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Spencer Lodge, Zone Archaeologist – Klamath Basin
Interior Region 10 Cultural Resource Team
1936 California Ave., Klamath Falls, OR 97601
phone:541-885-2519, fax:541-885-7837, cell:512-757-6363
email: spencer_lodge@fws.gov

21 October 2020

To: Dan Blake, Field Supervisor – Fish and Wildlife Service
Program: Fisheries
Funding: Fisheries

From: Spencer Lodge, Zone Archaeologist – Klamath Basin

RE: Section 106 Compliance: **Klamath Falls National Fish Hatchery Project –** Klamath County, Oregon
SHPO Case No. 20-0742

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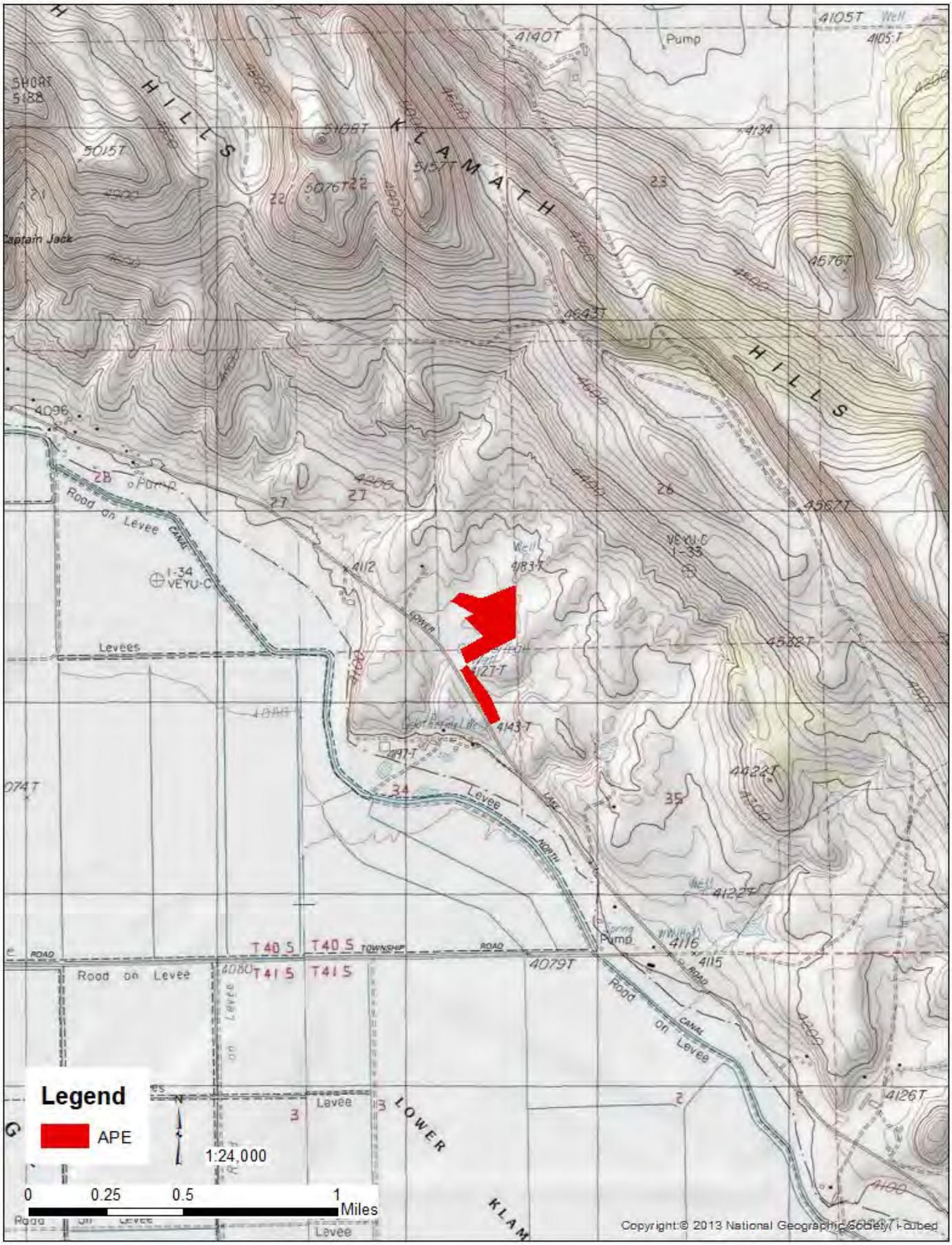

Figure 1. Location map for the Klamath Falls National Fish Hatchery Project.

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Tribal

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Spencer Lodge, Zone Archaeologist – Klamath Basin
Interior Region 10 Cultural Resource Team
1936 California Street, Klamath Falls, OR 97601
phone: 541-885-2519 x129, fax: 541-885-7837, cell: 512-757-6363
email: spencer_lodge@fws.gov

18 May 2020

To: Diane Teeman
100 Pa'Si 'Go St.
Burns, OR 97720

From: Spencer Lodge, Zone Archaeologist – Klamath Basin

Subject: Initiation of Section 106 Consultation for **Klamath Falls National Fish Hatchery Project**, Klamath County, Oregon.

The U.S. Fish and Wildlife Service (USFWS), Interior Region 10, is entering into a lease agreement with a private landowner to establish a fish hatchery for endangered Shortnose and Lost River suckers in Klamath County, Oregon (T40S R9E Sections 26, 27, 34, 35; Lost River OR 7.5' USGS quad) (Figures 1-2).

Pursuant to its responsibilities under Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, the FWS has determined that the proposed action is a federal undertaking. The Native American Heritage Commission has identified your tribe as being interested in projects occurring in this area. Through this letter, the FWS is initiating consultation with your tribe pursuant to 36 CFR 800.2(c), 800.4(a)(3) and 800.4(a)(4).

The Undertaking and Area of Potential Effects: The project will develop the site at the Klamath Falls National Fish Hatchery to annually produce 60,000 endangered Shortnose sucker and Lost River sucker for stocking into Upper Klamath Lake. This will include creation of numerous ponds ranging in size from 0.1 acre to 0.5 acre, construction of a new hatchery building, development of water movement system (including drilling a new well), and various infrastructure necessary to accomplish hatchery objectives, such as roads, piping, and electrical infrastructure, etc.

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Gravel roads to access all necessary areas of the site may also be graded and compacted using heavy grading equipment.

Environmental Setting and Land Use History: The area is located approximately 0.6 miles uphill from the historic eastern shoreline of Lower Klamath Lake prior to desiccation, although the existing maps are not accurate enough to clearly determine how close it was to the active shoreline. Elevation of the parcel ranges from 4,130 feet above sea level to 4,180 feet. Since desiccation, the area is on the transition zone between Klamath Lake Basin and Klamath Juniper Woodland Ecoregions, comprised of a mosaic of rangeland (sagebrush and wheatgrasses) and woodland (junipers). Soils in the site are classified as Aridic Haploxerolls (Mollisols; Capona Series) with distinct and well developed A and B horizons. However, we do not have confidence in this designation. Cursory site surveys clearly exhibit shallow developed soil horizons perched on diatomite – a friable, light-colored sedimentary rock that is primary comprised of the siliceous skeletal remains of diatoms from prehistoric lake communities. We don't know the approximate level of this diatomite below the surface, but it appears to be broadly distributed throughout the project area.

The adjacent historic lake bottoms were drained and farmed by the 1950's. This area was used for grazing (sheep) and agriculture (grain) during this period until the 1990s. Portions of the area were smoothed (not necessarily flattened) and irrigated for these purposes. The current landowner purchased the property in 1996 and created numerous ponds for private aquaculture purposes. He used heavy earthmovers, such as a bulldozer, to smooth and flatten much of the area that was previously sloped.

The project area currently consists of 50 100 ft x 14 ft x 4 ft deep ponds, 4 ¼-acre ponds, a settling pond approximately 250 ft x 100 ft, 3 head ponds approximately 100 ft x 40 ft, a greenhouse "building" structure 100 ft x 30 ft (3,000 sq ft), a well, a pump house, a settling tank, and approximately 0.5 miles of road. Approximately 10 acres (40%) of the entire 25-acre parcel is currently developed into ponds and infrastructure for tilapia farming. The remainder of the site is generally dry with sagebrush and other arid land vegetation.

A record search of files at the Cultural Resources Team (CRT) office in Sherwood, Oregon, and the digital database of the Oregon State Historic Preservation Office identified no previous sites

documented within the project area. One cultural identification effort has been documented within the APE, and several others have been conducted in the vicinity, primarily along the highway, as summarized in Table 1.

Table 1. Cultural resource identification efforts in the vicinity of the APE.

This cultural information is confidential and has not been disclosed for public viewing

Proposed Identification Effort and Determination of Effect:
Based on a review of geologic and hydrologic processes, past land use, and the scope of current activities, the FWS is making the preliminary recommendation that an archaeological survey and subsurface probing of the APE is warranted for this project. The FWS has hired a contractor to conduct Section 106 clearance for this project.

Initiating Section 106 review: As the FWS conducts this investigation to determine if the undertaking will affect historic properties, we look forward to receiving comments, information, or concerns from your office. This may include tribal input regarding sites of religious or cultural significance. We recognize that cultural resource information is sensitive and must be treated confidentially. The FWS would be happy to talk or meet with you or your staff regarding this project. To ensure your comments are given adequate consideration, please respond to the address on the letterhead within 30 days.

If you have any questions regarding the project, please contact me (spencer_lodge@fws.gov) at (541) 885-2519.

Sincerely,

Spencer Lodge
Klamath Basin Zone Archaeologist

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Spencer Lodge, Zone Archaeologist – Klamath Basin
Interior Region 10 Cultural Resource Team
1936 California Street, Klamath Falls, OR 97601
phone: 541-885-2519 x129, fax: 541-885-7837, cell: 512-757-6363
email: spencer_lodge@fws.gov

18 May 2020

To: Bernold Pollard
P.O. Box 129
Fort Bidwell, CA 96112

From: Spencer Lodge, Zone Archaeologist – Klamath Basin

Subject: Initiation of Section 106 Consultation for **Klamath Falls National Fish Hatchery Project**, Klamath County, Oregon.

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If you have any questions regarding the project, please contact me (spencer_lodge@fws.gov) at (541) 885-2519.

Sincerely,

Spencer Lodge
Klamath Basin Zone Archaeologist

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Spencer Lodge, Zone Archaeologist – Klamath Basin
Interior Region 10 Cultural Resource Team
1936 California Street, Klamath Falls, OR 97601
phone: 541-885-2519 x129, fax: 541-885-7837, cell: 512-757-6363
email: spencer_lodge@fws.gov

18 May 2020

To: Perry Chocktoot - Culture & Heritage Director
35601 Chokecherry Way
P.O. Box 436

From: Spencer Lodge, Zone Archaeologist – Klamath Basin

Subject: Initiation of Section 106 Consultation for **Klamath Falls National Fish Hatchery Project**, Klamath County, Oregon.

The U.S. Fish and Wildlife Service (USFWS), Interior Region 10, is entering into a lease agreement with a private landowner to establish a fish hatchery for endangered Shortnose and Lost River suckers in Klamath County, Oregon (T40S R9E Sections 26, 27, 34, 35; Lost River OR 7.5' USGS quad) (Figures 1-2).

Pursuant to its responsibilities under Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, the FWS has determined that the proposed action is a federal undertaking. The Native American Heritage Commission has identified your tribe as being interested in projects occurring in this area. Through this letter, the FWS is initiating consultation with your tribe pursuant to 36 CFR 800.2(c), 800.4(a)(3) and 800.4(a)(4).

The Undertaking and Area of Potential Effects: The project will develop the site at the Klamath Falls National Fish Hatchery to annually produce 60,000 endangered Shortnose sucker and Lost River sucker for stocking into Upper Klamath Lake. This will include creation of numerous ponds ranging in size from 0.1 acre to 0.5 acre, construction of a new hatchery building, development of water movement system (including drilling a new well), and various infrastructure necessary to accomplish hatchery objectives, such as roads, piping, and electrical infrastructure, etc.

The specific design is not fully developed to date, and so the details may morph slightly. Nevertheless, the activities described below are likely to occur to some degree. The description is intended to be comprehensive to include all possible activities. We assume that the entire 25 acres will be disturbed to some degree ranging from 1 to 25 feet in depth, with the average likely being about 5 feet.

Heavy earth-moving equipment (likely metal-track) will be used to level areas throughout the entire project area. An excavator will be used to dig ponds of various depths ranging from 5-8 feet ranging in size from 0.1 – 0.5 acres. Soil removed from the excavated areas will be deposited on site in spoil piles or spread on other areas to elevate the grade. Liners will be placed in each pond using the excavator to pull the liner to cover the entire footprint. These will be embedded in the banks of the ponds with the excavator piling spoil from the disturbed areas, such as the pond footprint. Trenching will occur to bury electrical wires and/or water pipes. This will occur at a depth of 2-4 feet below the surface. A well will be drilled (likely > 100 ft deep). This will include associated

pump house structures and settling/cooling tanks. Construction will include a cement slab foundation and excavation up to 10 feet deep for these associated structures.

Depending on design, numerous drain kettles will be constructed. These are cement structures approximately 20 feet wide by 100 feet long and 25 feet deep. A pipe will drain from the bottom of these structures. Construction includes excavating to a depth of 25 feet (lower for the drain pipe) and installation of cement forms and pouring of cement.

A building of approximately 5,000 square feet will be constructed on site. This will include a cement slab foundation and a potential for an associated septic tank and leach field. Poles to hold electrical and communication wires will also be buried on site to appropriate depths. Fencing to provide site security may also be included along the perimeter of the site, with poles buried to a depth of up to 3 feet.

Hand tools, including shovels and pick axes, may also be used. Once the ponds are shaped and lined, 6 ft t-posts will be driven into the substrate around the perimeter of each pond at intervals of approximately 20 ft. These will be driven to a depth of approximately 3 ft. Bird netting to prevent predation will be stretched across these to cover the ponds.

Gravel roads to access all necessary areas of the site may also be graded and compacted using heavy grading equipment.

Environmental Setting and Land Use History: The area is located approximately 0.6 miles uphill from the historic eastern shoreline of Lower Klamath Lake prior to desiccation, although the existing maps are not accurate enough to clearly determine how close it was to the active shoreline. Elevation of the parcel ranges from 4,130 feet above sea level to 4,180 feet. Since desiccation, the area is on the transition zone between Klamath Lake Basin and Klamath Juniper Woodland Ecoregions, comprised of a mosaic of rangeland (sagebrush and wheatgrasses) and woodland (junipers). Soils in the site are classified as Aridic Haploxerolls (Mollisols; Capona Series) with distinct and well developed A and B horizons. However, we do not have confidence in this designation. Cursory site surveys clearly exhibit shallow developed soil horizons perched on diatomite – a friable, light-colored sedimentary rock that is primary comprised of the siliceous skeletal remains of diatoms from prehistoric lake communities. We don't know the approximate level of this diatomite below the surface, but it appears to be broadly distributed throughout the project area.

The adjacent historic lake bottoms were drained and farmed by the 1950's. This area was used for grazing (sheep) and agriculture (grain) during this period until the 1990s. Portions of the area were smoothed (not necessarily flattened) and irrigated for these purposes. The current landowner purchased the property in 1996 and created numerous ponds for private aquaculture purposes. He used heavy earthmovers, such as a bulldozer, to smooth and flatten much of the area that was previously sloped.

The project area currently consists of 50 100 ft x 14 ft x 4 ft deep ponds, 4 ¼-acre ponds, a settling pond approximately 250 ft x 100 ft, 3 head ponds approximately 100 ft x 40 ft, a greenhouse "building" structure 100 ft x 30 ft (3,000 sq ft), a well, a pump house, a settling tank, and approximately 0.5 miles of road. Approximately 10 acres (40%) of the entire 25-acre parcel is currently developed into ponds and infrastructure for tilapia farming. The remainder of the site is generally dry with sagebrush and other arid land vegetation.

A record search of files at the Cultural Resources Team (CRT) office in Sherwood, Oregon, and the digital database of the Oregon State Historic Preservation Office identified no previous sites

documented within the project area. One cultural identification effort has been documented within the APE, and several others have been conducted in the vicinity, primarily along the highway, as summarized in Table 1.

Table 1. Cultural resource identification efforts in the vicinity of the APE.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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1936 California Street, Klamath Falls, OR 97601
phone: 541-885-2519 x129, fax: 541-885-7837, cell: 512-757-6363
email: spencer_lodge@fws.gov

7 July 2020

To: Chairperson – Modoc Tribe of Oklahoma

From: Spencer Lodge, Zone Archaeologist – Klamath Basin

Subject: Initiation of Section 106 Consultation for **Klamath Falls National Fish Hatchery Project**, Klamath County, Oregon.

The U.S. Fish and Wildlife Service (USFWS), Interior Region 10, is entering into a lease agreement with a private landowner to establish a fish hatchery for endangered Shortnose and Lost River suckers in Klamath County, Oregon (T40S R9E Section 26, 27, 34, 35; Lost River OR 7.5' USGS quad) (Figures 1-2).

Pursuant to its responsibilities under Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800, the FWS has determined that the proposed action is a federal undertaking. The Native American Heritage Commission has identified your tribe as being interested in projects occurring in this area. Through this letter, the FWS is initiating consultation with your tribe pursuant to 36 CFR 800.2(c), 800.4(a)(3) and 800.4(a)(4).

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The specific design is not fully developed to date, and so the details may morph slightly. Nevertheless, the activities described below are likely to occur to some degree. The description is intended to be comprehensive to include all possible activities. We assume that the entire 25 acres will be disturbed to some degree ranging from 1 to 25 feet in depth, with the average likely being about 5 feet.

Heavy earth-moving equipment (likely metal-track) will be used to level areas throughout the entire project area. An excavator will be used to dig ponds of various depths ranging from 5-8 feet ranging in size from 0.1 – 0.5 acres. Soil removed from the excavated areas will be deposited on site in spoil piles or spread on other areas to elevate the grade. Liners will be placed in each pond using the excavator to pull the liner to cover the entire footprint. These will be embedded in the banks of the ponds with the excavator piling spoil from the disturbed areas, such as the pond footprint. Trenching will occur to bury electrical wires and/or water pipes. This will occur at a depth of 2-4 feet below the surface. A well will be drilled (likely > 100 ft deep). This will include associated pump house structures and settling/cooling tanks. Construction will include a cement slab foundation and excavation up to 10 feet deep for these associated structures.

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Environmental Setting and Land Use History: The area is located approximately 0.6 miles uphill from the historic eastern shoreline of Lower Klamath Lake prior to desiccation, although the existing maps are not accurate enough to clearly determine how close it was to the active shoreline. Elevation of the parcel ranges from 4,130 feet above sea level to 4,180 feet. Since desiccation, the area is on the transition zone between Klamath Lake Basin and Klamath Juniper Woodland Ecoregions, comprised of a mosaic of rangeland (sagebrush and wheatgrasses) and woodland (junipers). Soils in the site are classified as Aridic Haploxerolls (Mollisols; Capona Series) with distinct and well developed A and B horizons. However, we do not have confidence in this designation. Cursory site surveys clearly exhibit shallow developed soil horizons perched on diatomite – a friable, light-colored sedimentary rock that is primary comprised of the siliceous skeletal remains of diatoms from prehistoric lake communities. We don't know the approximate level of this diatomite below the surface, but it appears to be broadly distributed throughout the project area.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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phone: 541-885-2519 x129, fax: 541-885-7837, cell: 512-757-6363
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7 July 2020

To: John Ballard, Environmental Director – Modoc Tribe of Oklahoma

From: Spencer Lodge, Zone Archaeologist – Klamath Basin

Subject: Initiation of Section 106 Consultation for **Klamath Falls National Fish Hatchery Project**, Klamath County, Oregon.

The U.S. Fish and Wildlife Service (USFWS), Interior Region 10, is entering into a lease agreement with a private landowner to establish a fish hatchery for endangered Shortnose and Lost River suckers in Klamath County, Oregon (T40S R9E Section 26, 27, 34, 35; Lost River OR 7.5' USGS quad) (Figures 1-2).

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Sincerely,

Spencer Lodge
Klamath Basin Zone Archaeologist

The Klamath Tribes

October 19, 2020

Mr. Greg Allington
McMillen Jacobs Associates
1471 Shoreline Drive, Suite 100
Boise, Idaho 83702

Subject: Draft Environmental Assessment (EA) for the proposed construction of the Klamath Falls National Fish Hatchery

Dear Mr. Allington,

The Klamath Tribes appreciate the opportunity to review the draft EA for the proposed construction of the new Klamath Falls National Fish Hatchery. A controlled propagation program is a necessary step to prevent the extinction of two critically endangered fish, the Koptu (shortnose sucker, *Chasmistes brevirostris)* and C'waam (Lost River sucker, *Deltistes luxatus).* Both fish are important tribal trust species and have been essential to the spiritual, cultural, and material wellbeing of the Tribes for millennia. Through the combined assisted rearing programs of the US Fish and Wildlife Service and the Klamath Tribes we hope to bolster the number of adult suckers in Upper Klamath Lake and eventually achieve substantial natural recruitment supporting species recovery and harvestable fisheries.

The draft EA was well written, comprehensive, and technically accurate. We believe that the document adequately addresses potential environmental effects associated with construction of the Klamath Falls National Fish Hatchery. We have no additional comments. Again, thank you for providing the Tribes an opportunity to comment on this document.

Sincerely,

Donald C. Gentry
Tribal Chairman

501 Chiloquin Blvd. – P.O. Box 436 – Chiloquin, Oregon 97624
(541) 783-2219 – Fax (541) 783-2609

U.S. Army Corps of Engineers
(USACE)

CONSULTATION AND COORDINATION SUMMARY

Klamath Falls National Fish Hatchery Project

At the issuance of this Final EA, no comments had been received regarding the Project.

State of Oregon

CONSULTATION AND COORDINATION SUMMARY

Klamath Falls National Fish Hatchery Project

At the issuance of this Final EA, no comments had been received regarding the Project.

Stakeholders

From: Hiatt, Kristen
To: Allington, Greg
Cc: Bottcher, Jared L; Babcock, Amanda J; Young, Brandon (Kirk) K; NEUMAN, MICHAEL J
Subject: Fw: Public comment opens on draft hatchery environmental assessment
Date: Monday, September 28, 2020 4:44:15 PM
Attachments: Combined_Comment_Sheet_Draft_EA_USFWS_Klamath_Falls_National_Fish_Hatchery_final.xlsx

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CAUTION: This email was received from an external source

Please see attached for Reclamation's comments on the draft Environmental Assessment on the proposed construction of Klamath Falls National Fish Hatchery. We appreciate the opportunity to review and provide input.

Please let us know if you have questions or would like to discuss our comments further.

Best,
Kristen

Kristen L. Hiatt
Environmental Compliance Branch Chief
Bureau of Reclamation Klamath Basin Area Office
Interior Region 10 · California-Great Basin
Work: 541-880-2577
Cell: 541-591-9492
Email: khiatt@usbr.gov

From: Sawyer, Susan <susan_sawyer@fws.gov>
Sent: Monday, September 14, 2020 6:55 PM
Subject: Public comment opens on draft hatchery environmental assessment

Greetings to our valued Agency and Tribal partners, media and neighbors:

First and most importantly, I understand many of you are dealing with the unprecedented and dangerous wildfires in our area. Please know that our heartfelt thoughts are with you and your families for safely enduring this extremely difficult time.

The U.S. Fish and Wildlife Service today announced a two week public comment period for a draft Environmental Assessment on the proposed construction of Klamath Falls National Fish Hatchery.
The Service will consider comments from all interested parties received by September 28, 2020.

Information on how to submit comments is available in the News Bulletin, attached and link
here: https://www.fws.gov/klamathfallsfwo/suckers/FInal_KFNFH_pubCmt_Bulletin091420.pdf

Please refer to the draft EA document available
at: https://www.fws.gov/klamathfallsfwo/suckers/USFWS_Klamath_Falls_NFH_Draft_EA.pdf
for specifics on the proposed project for more information.

If you have any questions please reach out to the contacts in the Bulletin.

Regards and stay safe,

Susan

Susan Sawyer, Public Affairs Officer
USFWS IR10/California-Great Basin External Affairs/Klamath Basin
(Klamath Falls, Yreka FWOs; Klamath Basin NWRC)
cell: 916/539 - 7436

Klamath Falls National Fish Hatchery	**Public Draft Environmental Assessment - Septemeber 2020 Comments**			**Organization:**	**Bureau of Reclamation, Klamath Basin Area Office**		
Date:	**9/17/2020**						
Database Comment #	**Page Printed #** (page # printed on the document NOT the page # assigned by adobe PDF)	**Section #**	**Text of Beginning of Paragraph**	**Referenced Text**	**Comment**	**Commenter's Agency Name**	**Comment Date**
1	3	1.4.2 and throughout document	The Project area is currently developed	USFWS have successfully propagated shortnose suckers	Can you clarify? In this context, does "propagate" mean raise from collected larvae, or mix eggs and milt from adult suckers and hatch fertilized eggs, or both?	Reclamation	9/24/2020
2	10	3.2.2	The hatchery site would be modified	The capacity for extended salvage fish would increase from 510 to 2,250, capacity for broodstock would increase from 255 to 1,750, capacity for larvae incubation would increase from 40,000 to 100,000, and capacity for salvage fish from 1,500 to 2,500.	Maybe I missed it but what is the difference between "extended salvage" fish and salvage fish? It'd be helpful if all these types of fish were more explictly defined.	Reclamation	9/24/2020
3	10 and 11	3.2.2	Long Term Operations and Maintenance	A long term operations and maintenance plan would be developed for the project during the final design stage of the Project and would be finalized prior to the start of construction activities…	Is USFWS considering to include other parties (state, tribal,…) in development of the long term operations and maintenance plan?	Reclamation	9/24/2020
4	19	4.2.4	The current landowner holds	There is currently no indication of water-level decline or depletion for this aquifer (Gannett et al. 2007).	Has this been assessed again in the last 13 years? Has the amount of water pumped increased since the development of the Gone Fishing Hatchery? 13 years seems like a long time ago for this type of analysis.	Reclamation	9/24/2020
5	**89	Summary of Special Status Species	Table	Fringed Myotis (Myotis	Typo, should be "S" instead of "oS"	Reclamation	9/24/2020

APPENDIX B

PROJECT MAPS

Map 1 – Vicinity Map

Map 2 – USFWS Lease Parcels

Map 3 – Existing Conditions

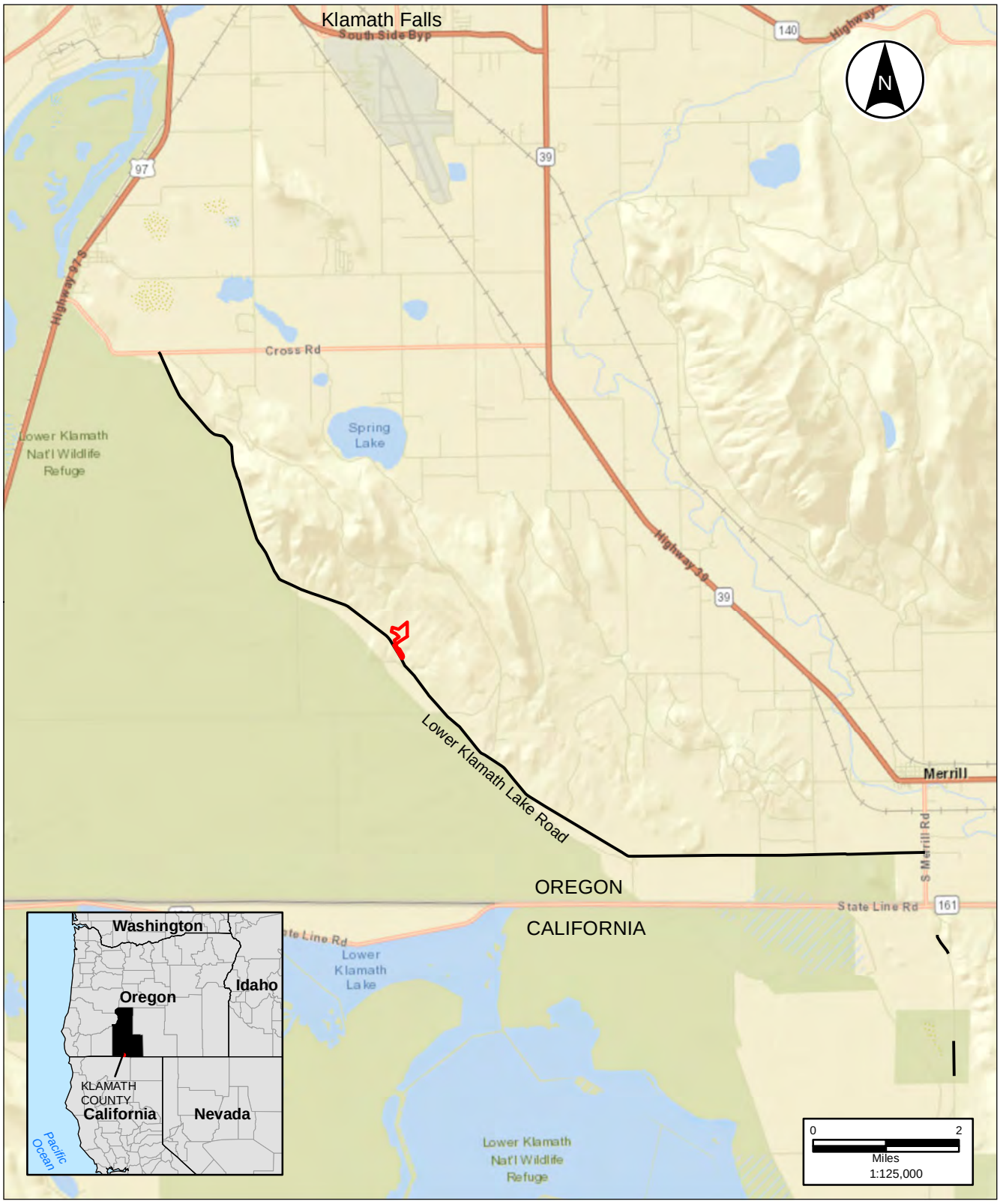
Map 4 – Full Hatchery Build-out Alternative

Map 5 – Soils

Map 6 – Surface Water Drainage

Map 7 – Waters of the U.S. and Wetlands

Map 8 – Wildlife Habitat



Legend

Project Area

Map 1

Vicinity Map

NAD 1983 UTM Zone 10N
Source: ESRI, USGS

USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\EA_Maps\Map1_Vicinity_Map.mxd

Legend

USFWS Lease Parcels

Project Area

NAD 1983 UTM Zone 10N

Source: ESRI

Image: Oregon Statewide Imagery Program, 2018

Map 2

USFWS Lease Parcels

USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\EA_Maps\Map2_USFWS_Lease_Parcels.mxd

NAD 1983 UTM Zone 10N
Source: ESRI
Image: Oregon Statewide Imagery Program, 2018

Legend

Project Area

Hatchery Access

Map 3

Existing Conditions

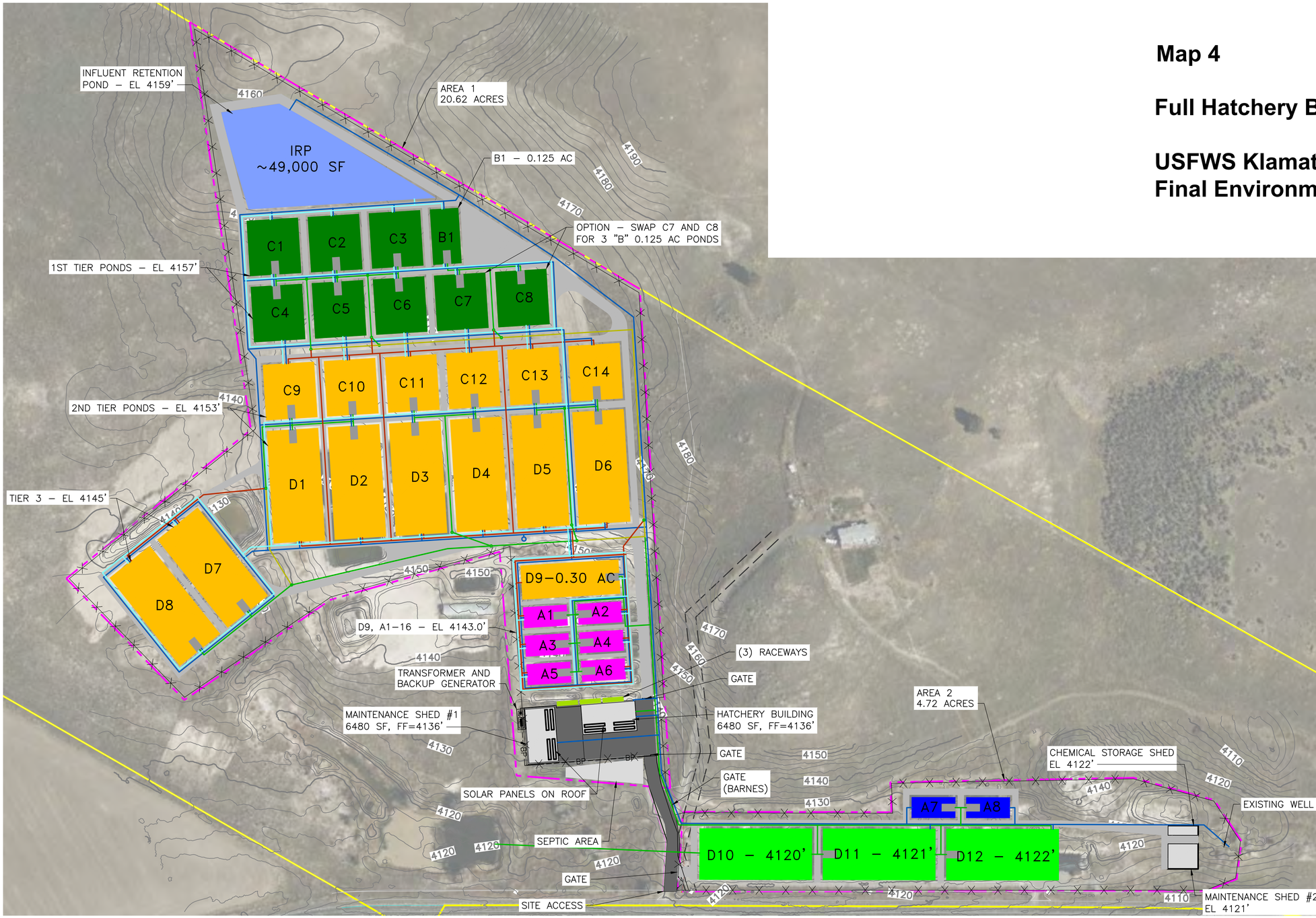
USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\EA_Maps\Map3_Existing_Conditions_rev.mxd

Map 4

Full Hatchery Build-out Alternative

USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment



PROJECT NORTH

N

LEGEND

- INFLUENT RETENTION POND
- TIER 1 PONDS
- TIER 2 PONDS
- BROOD STOCK
- EXTENDED SALVAGE
- EFFLUENT RETENTION PONDS
- NEW STRUCTURE
- GRAVEL ACCESS ROAD
- ASPHALT ROAD AND PARKING
- SEPTIC SYSTEM AREA
- RACEWAY
- POND KETTLE

kpff
2407 North 31st Street, Suite 100
Tacoma, Washington 98407
(253) 396-0150 Fax (253) 396-0162

NOTES:

1. AERIAL IMAGERY TAKEN FROM MICROSOFT BING.
2. POND ELEVATIONS NOTED REFLECT TOP OF POND ELEVATION. AVERAGE POND DEPTH SHOWN AT 4 FT.
3. POND LAYOUT AND ELEVATIONS SUBJECT TO CHANGE PENDING FINAL SCHEMATIC DESIGN APPROVAL.

GRAPHIC SCALE

0 50 100 200 400

1 inch =100 ft.

VERIFY SCALE

THIS BAR IS ONE INCH ON ORIGINAL DRAWING

0" 1"

ADJUST SCALES ACCORDINGLY, IF NOT ONE INCH ON THIS SHEET

REV.	DATE	DESCRIPTION	BY

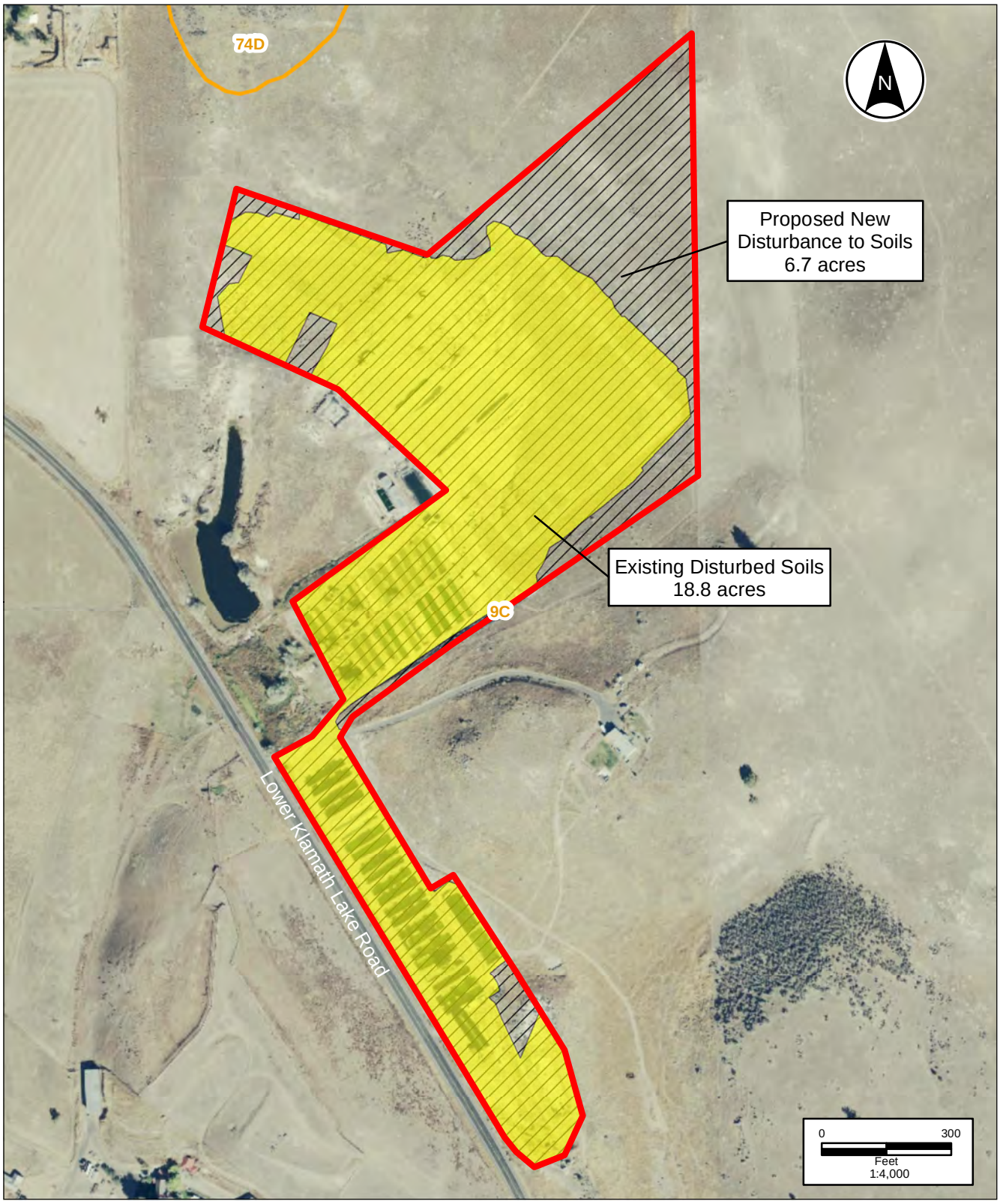
KLAMATH FALLS N.F.H. C1.0

NEW NATIONAL FISH HATCHERY PLAN

SITE PLAN

DESIGNED	DRAWN	CHECKED	DATE	DRAWING NO.
CMB	RRL	SWK	08/10/20	1F–OR–XXX–XXX–02.0

SCHEMATIC DESIGN NOT FOR CONSTRUCTION



Legend

- Soil Map Units
  - 9C: Capona Loam
- Existing Disturbed Soils
- Proposed Disturbance
- Project Area

NAD 1983 UTM Zone 10N

Sources: ESRI, USDA/NRCS
Soil Survey October 2017
Image: Oregon Statewide Imagery Program, 2018

Map 5

Soils

USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\EA_Maps\Map5_Soils.mxd

Legend

- Off-Site Drainage (Channel)
- Off-Site Drainage (Pipe)
- Off-Site Drainage (Ditch)
- Project Area

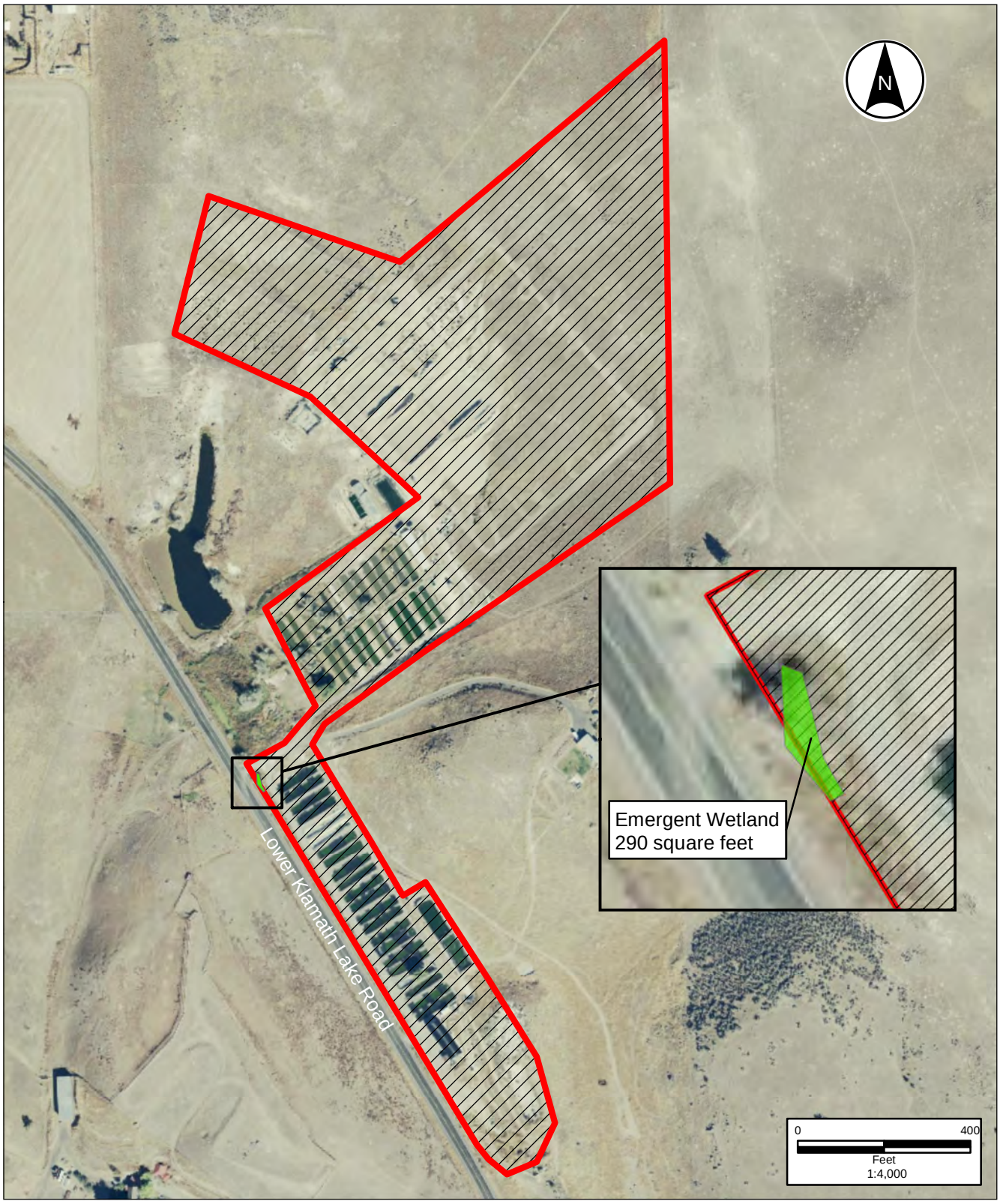
NAD 1983 UTM Zone 10N
Source: ESRI
Image: Oregon Statewide Imagery Program, 2018

Map 6

Surface Water Drainage

USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\EA_Maps\Map6_Surface_Water_Drainage.mxd



Legend

- Project Area
- Wetland
- Proposed Disturbance

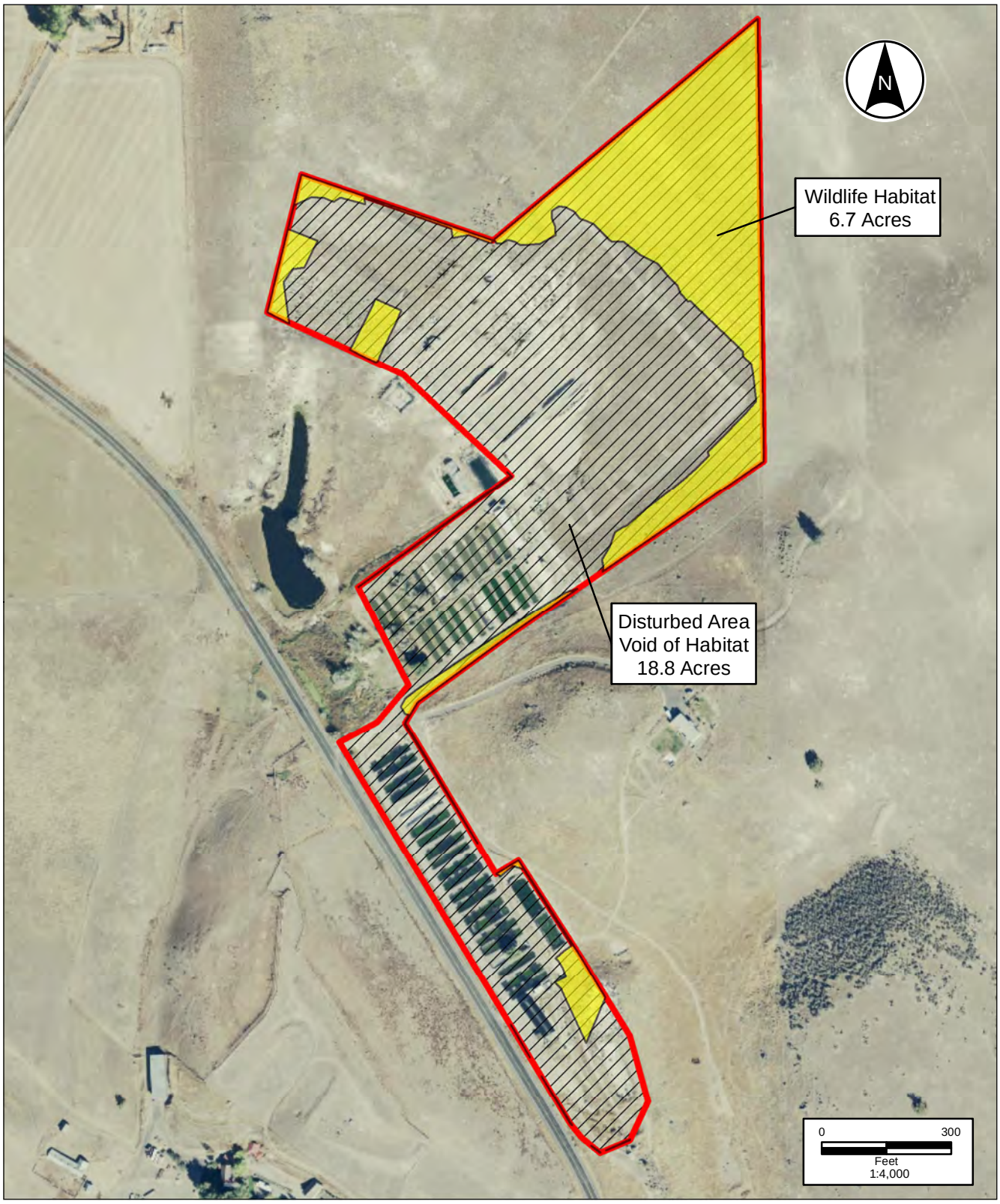
NAD 1983 UTM Zone 10N
Source: ESRI
Delineation conducted by McMillen Jacobs Associates on June 3 and 4, 2020
Image: Oregon Statewide Imagery Program, 2018

Map 7

Waters of the U.S. and Wetlands

USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\EA_Maps\Map7_Wetlands.mxd



Legend

- Wildlife Habitat
- Project Area
- Proposed Disturbance

NAD 1983 UTM Zone 10N

Source: ESRI
Image: Oregon Statewide Imagery Program, 2018

Map 8

Wildlife Habitat

USFWS Klamath Falls National Fish Hatchery
Final Environmental Assessment

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\EA_Maps\Map8_Wildlife_Habitat.mxd

APPENDIX C

SUPPORTING INFORMATION

Project Area Photographs

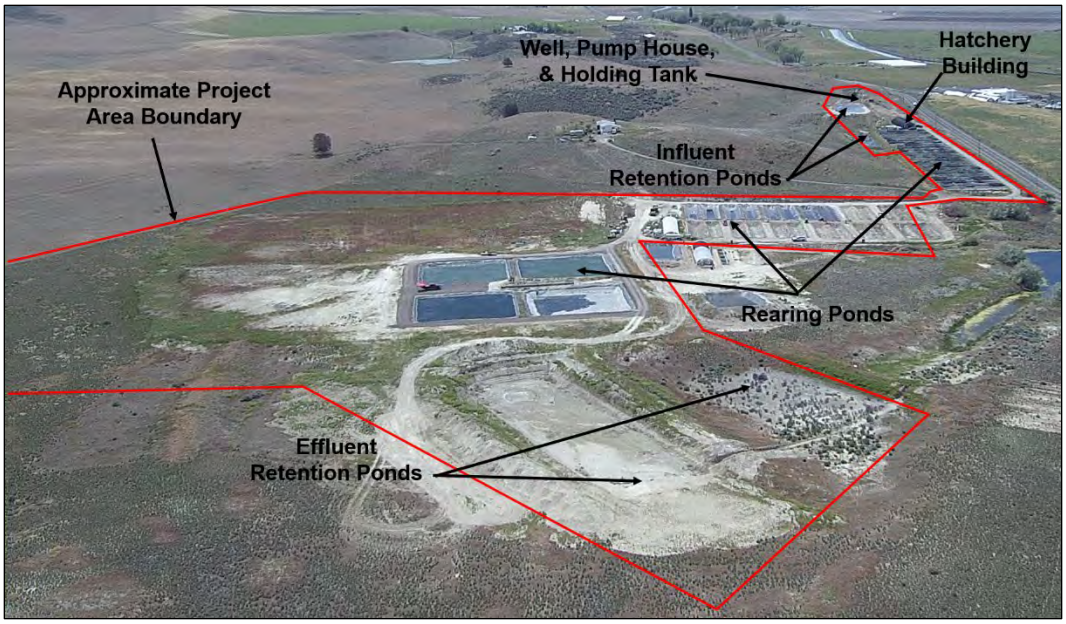
Summary of Special Status Species Table

Scoping Meeting Minutes

Draft EA Notice of Availability Materials

Waters of the U.S. and Wetlands Delineation Report

Project Area Photographs



Photograph 1 – General view of the Project area facing south.

Photograph 2 – View of the geothermal well and pump house facing south.

Photograph 3 – View of the holding tank facing south.

Photograph 4 – View of two adjoining influent retention ponds facing south.

Photograph 5 – View of southern-most influent retention pond facing north.

Photograph 6 – View of rearing ponds and hatchery building in southern portion of Project area facing north.

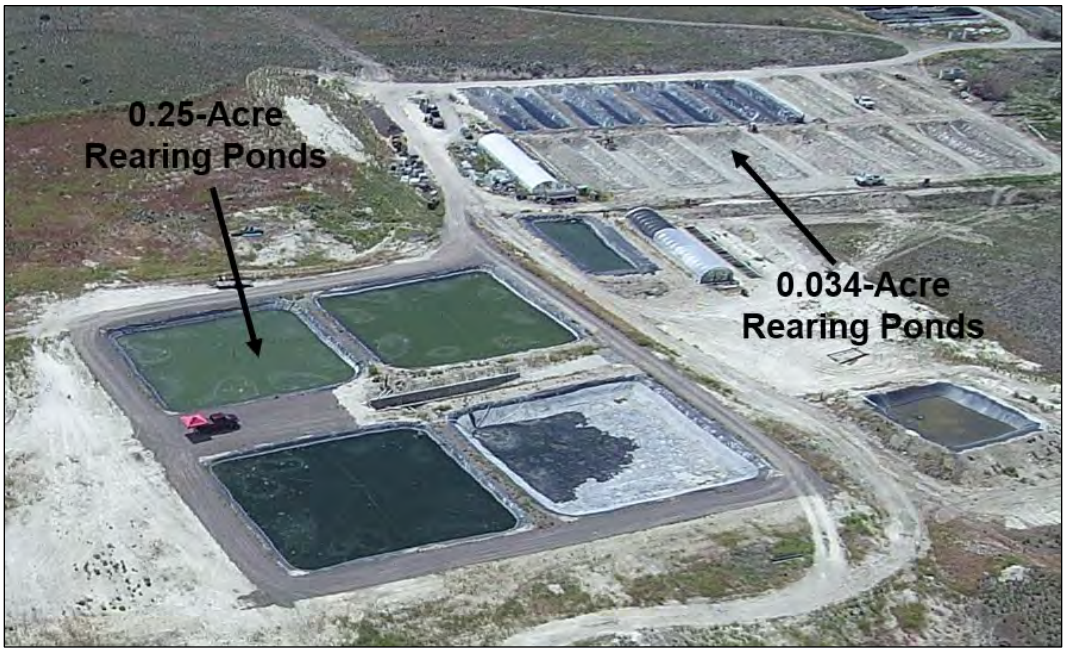
Photograph 7 – View of the hatchery building facing northwest.

Photograph 8 – View inside the hatchery building from Photograph 7.

Photograph 9 – View over 0.034-acre rearing ponds from Photograph 6 facing northwest.

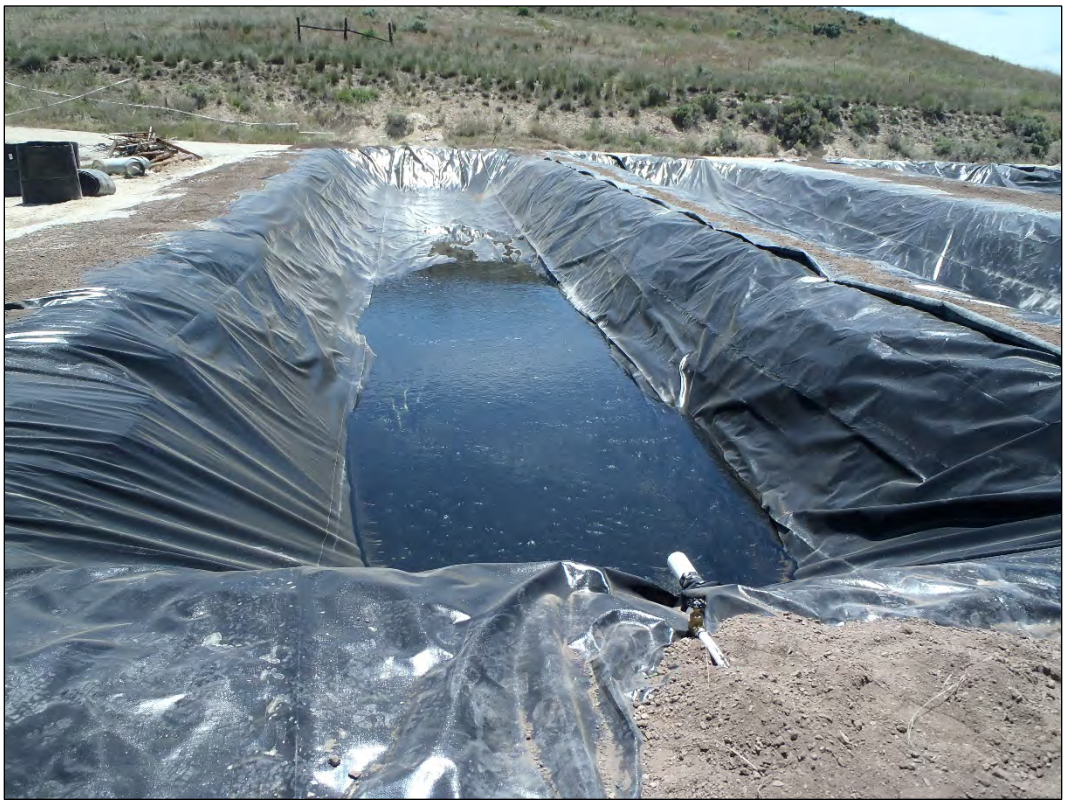
Photograph 10 – View of access road from Lower Klamath Lake Road facing southwest.

Photograph 11 – View of access road leading to rearing ponds in the northern portion of the Project area facing northeast.



Photograph 12 – View of rearing ponds in the northern portion of the Project area facing south.

Photograph 13 – View of a 0.25-acre pond from Photograph 8 facing east.



Photograph 14 – View of 0.034-acre ponds from Photograph 8 facing southeast.

Photograph 15 – View of the northern-most effluent retention pond facing southeast.

Photograph 16 – View of the southern-most effluent retention pond facing northwest.

Photograph 17 – View of disturbed area in the northern portion of the Project area facing north.

Photograph 18 – View of undisturbed area in the northern portion of the Project area facing southeast.

Summary of Special Status Species Table

Summary of Special Status Species

Common Name	Status		Potential to Occur in the Project Area	Habitat Description
	ESA	State		
Mammals				
American Pika (*Ochotona princeps*)	-	S	No	Pika require talus, creviced rock, and other high-elevation habitats that provide cool microclimate. This species forages for vegetation close to rocky crevices (ODFW 2020a).
California Myotis (*Myotis californicus*)	-	S	Yes, foraging	Found in a variety of habitats from forest to desert conditions at elevations up to 5900 ft and is more common in locations with areas of slack water. Roosts in large snags or sometimes bridges during breeding season and in mines, caves, and buildings during the winter. Their diet consists of moths, beetles, and flies (ODFW 2020a; Digital Atlas of Idaho 2000).
Canada Lynx (*Lynx canadensis)*	T	-	No	Habitat includes boreal forests that have cold, snowy winters and high-density snowshoe hare prey base (USFWS 2020d).
Fringed Myotis (*Myotis thysanodes*)	-	oS	No	Requires forest habitat where large snags and rock features are available for roosting. Caves and mines are used for hibernation. Beetles and moths provide the majority of their diet. This species is found in the East Cascades CSE but not in the southern portion of the state (ODFW 2016; 2020a).
Gray Wolf (*Canis lupus*)	E	-	No	Gray wolves can be found anywhere there is sufficient food source (primarily deer, elk, and moose, but also small mammals and livestock (ODFW 2017; 2019b). The closest pack to the site is located approximately 35 miles to the northeast and there are no known den sites in or near the site.
Hoary Bat (*Lasiurus cinereus*)	-	S	No	Roosts in tree branches in late-successional conifer habitats and likes to feed around outdoor lights. This species migrates south in the winter and returns to Oregon in the spring (ODFW 2016; 2020a).
Long-legged Myotis (*Myotis volans*)	-	S	No	Requires snags and hollows for day, night, and maternity roosting in coniferous forests in the mountains. This species also uses bridges, caves, and mines for roosting. Hunts for insects in the early evenings during the breeding season and hibernates in the winter (ODFW 2016; 2020a).
Northern American Wolverine (*Gulo gulo luscus*)	PT	-	No	Restricted to high-elevation habitats in the Cascade Mountains containing the alpine and subalpine forest conditions with rugged terrain (ODFW 2016). In Oregon, the species has been found only in Linn, Deschutes, Harney, and Wallowa Counties (ODFW 2020a).
Pacific Marten (*Martes caurina*)	-	S	No	Occupies mature forests with dense canopy, large-diameter trees, diverse understory, and abundant standing and downed dead trees (USFS 2014).
Pallid Bat (*Antrozous pallidus*)	-	S	Yes	Forages for insects at night in grasslands, shrub-steppe, and dry forest environments and roosts in the crevices of cliffs, caves, mines, or bridges (ODFW 2016; 2020a).

Common Name	Status		Potential to Occur in the Project Area	Habitat Description
	ESA	State		
Sierra Nevada Red Fox (*Vulpes vulpes necator*)	-	S	No	Lives in high-elevation meadows and forests in the Oregon Cascades (ODFW 2016).
Silver-haired Bat (*Lasionycteris noctivagans*)	-	S	No	Inhabits large snags and hollow trees in late-successional conifer forests and forages for insects over ponds, streams, meadows, and roads. This migratory species may be found near rangeland streams in May and September (ODFW 2016; 2020a).
Spotted Bat (*Euderma maculatum*)	-	S	No	This rare species lives in dry climates like meadows and shrub-steppe, and forages along riparian corridors and water sources. It roosts on high cliffs (ODFW 2016; 2020).
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	-	SC	No	Roosts in large numbers in caves, mines, and isolated buildings during the day, night, and for breeding and hibernation. The species is highly vulnerable to human disturbance (ODFW 2016; 2020a).
Birds				
American Three-toed Woodpecker (*Picoides dorsalis*)	-	S	No	Inhabits coniferous forests, especially mature and old-growth forests with dead or dying trees damaged by wind, floods, or fire. Feeds and nests in snags with insect infestations (Cornell Lab of Ornithology 2020).
American White Pelican (*Pelecanus erythrorhynchos*)	-	S	No	Found in large flocks on inland lakes, rivers, and wetlands throughout the central and western U.S., Canada, and Mexico during the warmer months and migrates to the coasts in the southern U.S. and Mexico in the winter. Breeds on isolated islands in freshwater lakes and forages in shallow water, including in the Lower and Upper Klamath NWRs and is common to abundant in Klamath County (Cornell Lab of Ornithology 2020; ODFW 2020a).
Black-backed Woodpecker (*Picoides arcticus*)	-	S	No	Inhabits recently burned areas of coniferous forests and occasionally deciduous forest where insect infestations occur. Nesting occurs mostly in a small, dead tree in areas with a high density of large trees. This species resides in burned areas until insect populations there decline and travel long distances in search of recently burned forest areas (Cornell Lab of Ornithology 2020).
Caspian Tern (*Hydroprogne caspia*)	-	S	No	Nests on the ground in a wide variety of saltwater and freshwater habitats, especially on islands in lakes and rivers. Breeds throughout the U.S. and migrates to the southern U.S. and Mexico shoreline and northern Caribbean islands. Subsists entirely on a diet of fish and crayfish (Cornell Lab of Ornithology 2020).
Flammulated Owl (*Psiloscops flammeolus*)	-	S	No	Feeds on insects hunted at night in the crowns of large trees or in clusters of understory shrubs. Nests in tree cavities in open, mature stands of coniferous trees that are interspersed with aspen or oak. The species has been found in desert oases, riparian corridors, and city parks during breeding season and migrates to Mexican pine forests for the winter (Cornell Lab of Ornithology 2020).

Common Name	Status		Potential to Occur in the Project Area	Habitat Description
	ESA	State		
Great Gray Owl (*Strix nebulosa*)	-	S	No	This species is a year-round resident in California and Oregon, spending most winters in lower elevations. Old raptor, raven, or squirrel nests in pine and fir forests near meadows or fields are used for breeding. Foraging for small mammals occurs at night and during the day in meadows and clear-cut forest areas (Cornell Lab of Ornithology 2020).
Greater Sandhill Crane (*Antigone canadensis tabida*)	-	S	No	Winters mostly in the southern U.S. and northern Mexico and migrates to the Pacific Northwest, Canada, and Alaska for breeding. Nesting occurs in large emergent marsh-meadow wetlands. Sandhill cranes feed primarily on seeds and cultivated grains, as well as berries, tubers, small vertebrates, and invertebrates; some populations also eat insects, reptiles, and amphibians (Cornell Lab of Ornithology 2020; ODFW 2020a).
Lewis's Woodpecker (*Melanerpes lewis*)	-	SC	No	Feeds on nuts, fruits, and flying insects in open forests, especially those with a high density of standing dead trees. Nests are made in holes and crevices, usually in dead trees in a variety of evergreen and deciduous woodlands near streams. This species was formerly widespread in Oregon but is currently common only near Mt. Hood; it also breeds in low numbers along eastern Oregon rivers and streams (Cornell Lab of Ornithology 2020; ODFW 2020a).
Long-billed Curlew (*Numenius americanus*)	-	S	No	Nests on the ground near rocks or piles of dirt in areas with sparse, short grasses and agricultural fields. Curlews eat insects, marine crustaceans, and bottom-dwelling marine invertebrates that burrow in mud. They are commonly found in open grassland areas east of the Cascade Mountains in Oregon during breeding season and migrate to Mexico in the winter (Cornell Lab of Ornithology 2020; ODFW 2020a).
Northern Goshawk (*Accipiter gentilis atricapillus*)	-	S	No	Nests in large trees near canopy breaks in mature and old-growth forests with more than 60% closed cover and water nearby. The species is a permanent resident in forested portions of the Klamath Mountains at elevations of 1900 to 6100 feet. They eat a wide range of prey, including mammals and large birds (Cornell Lab of Ornithology 2020; ODFW 2020a).
Northern Spotted Owl (*Occidentalis caurina*)	T	-	No	The species live in forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and live trees with broken tops (ODFW 2020b)
Olive-sided Flycatcher (*Contopus cooperi*)	-	SC	No	Prefers the edges of conifer forests from elevations near sea level to mountain timberlines near meadows, ponds, partially logged areas, or recently burned areas. They nest mostly in coniferous trees and eat primarily insects, as well as some berries (Cornell Lab of Ornithology 2020; ODFW 2020a).

Common Name	Status		Potential to Occur in the Project Area	Habitat Description
	ESA	State		
Red-necked Grebe (*Podiceps grisegena*)	-	SC	No	Found mostly on shallow, freshwater lakes in lowland areas during the breeding season and on the coasts during the winter. Nesting occurs near or on sheltered lakeshores in emergent or floating vegetation. They eat mostly fish and crustaceans, and some insects. Five to 20 birds at Rocky Point in the Upper Klamath Lake National Wildlife Refuge are the only consistent breeding population in Oregon (Cornell Lab of Ornithology 2020; ODFW 2020a).
Swainson's Hawk (*Buteo swainsoni*)	-	S	Yes, foraging	Forages for mammals and insects in open habitats like grasslands and agricultural fields. They nest near the top of solitary trees or in a small grove of trees along a stream, or sometimes on power poles or transmission towers. Resides in bunchgrass prairies east of the Cascades and is most common in the Blue and Wallowa Mountains (Cornell Lab of Ornithology 2020; ODFW 2020a).
Trumpeter Swan (*Cygnus buccinator*)	-	S	No	Nests on muskrat or beaver dens or small islands in shallow (less than 6 feet deep) undisturbed bodies of freshwater with abundant aquatic plants. They eat mostly aquatic plants and occasionally small fish and fish eggs during the breeding season and berries, grain crops, and tubers in the winter. This species is a year-round resident in south-central Oregon (Cornell Lab of Ornithology 2020; ODFW 2020a).
White-headed Woodpecker (*Picoides albolarvatus*)	-	SC	No	Nests are generally located in a cavity in a dead conifer or dead portion of a live conifer. Feeds primarily on ponderosa, sugar, Coulter, and Jeffrey pine seeds, as well as pine sap and insects during warmer months. This species is a resident year-round on the east side of the Cascade Mountains (Cornell Lab of Ornithology 2020; ODFW 2020a).
Yellow-billed Cuckoo (*Coccyzus americanus*)	T	-	No	Nests in willow trees along streams and rivers near stands of cottonwoods. The primary food for this species is caterpillars, and it will also eat other insects, fruit, and seeds. Historically, the yellow-billed cuckoo migrated to Oregon from the southern U.S. and Mexico during the breeding season, but it was never common in the state and the last confirmed breeding records occurred in the 1940s (Cornell Lab of Ornithology 2020; USFWS 2020e).
Yellow Rail (*Coturnicops noveboracensis*)	-	SC	No	Found in shallow marshes with short vegetation. Nests are on the ground, usually in unflooded parts of a sedge marsh in dense vegetation. Food consists of aquatic insects and mollusks, as well as seeds and other plant matter (Cornell Lab of Ornithology 2020).

Common Name	Status		Potential to Occur in the Project Area	Habitat Description
	ESA	State		
Amphibians				
Cascades Frog (*Rana cascadae*)	-	S	No	Found in a variety of habitats above 2400 feet, including mountain meadows, bogs, seasonally flooded forest swamps and shallow ponds, marshes and lakes. They hibernate in mud over the winter, and lay eggs in slow-moving water during the breeding season (ODFW 2016; 2020a).
Cope's Giant Salamander (*Dicamptodon copei*)	-	S	No	Relies on deep cobble, small boulders, in-channel logs, and other microhabitat features in cold, clear, fast-flowing streams in coniferous forests for foraging and breeding (ODFW 2016).
Oregon Spotted Frog (*Rana pretiosa*)	CH T	SC	No	Found in ponds, marshes, and meandering streams through meadows, preferring those with shallow water and a bottom layer of dead and decaying vegetation. This species overwinters in freeze-free seeps, springs, and channels connected to their breeding waters (ODFW 2016; 2020a).
Western Toad (*Anaxyrus boreas*)	-	S	No	Breeds in wetlands, lakes, and ponds with short, sparse, or no vegetation and can inhabit a range of habitats from forests to mountain meadows to desert flats. Outside the breeding season, they forage at night and dig burrows in loose soil or hide under woody debris or rocks for daytime cover (ODFW 2016; 2020a).
Reptiles				
California Mountain Kingsnake (*Lampropeltis zonata*)	-	S	No	Found in, under, or near rotting logs in open wooded areas near streams in pine forests, oak woodlands, and chaparral of southwestern Oregon valleys (ODFW 2020a).
Western Painted Turtle (*Chrysemys picta bellii*)	-	SC	No	Inhabits ponds, small lakes, slow-moving streams, and quiet off-channel portions of rivers with muddy bottoms and aquatic vegetation. Nests occur on sparsely vegetated, sunny ground, which is also used for basking. In the East Cascades CSE, this species lives only along the Columbia River (ODFW 2016; 2020a).
Western Pond Turtle (*Actinemys marmorata*)	-	SC	No	Found in marshes, streams, ponds, and lakes during the breeding season and moist, shrubby, or forested areas over the winter. Nests are made on sparsely vegetated ground, and sunny logs and vegetation are used for basking (ODFW 2016).
Plants				
Applegate's milk-vetch (*Astragalus applegatei)*	E	E	No	Found on flat seasonally moist remnants of alkaline floodplain grasslands of the Klamath Basin on poorly drained fine silt loam (NatureServe Explorer 2020).
Greene's tuctoria (*Tuctoria greenei)*	E	-	No	Species are restricted to vernal pools in the Central Valley California (NatureServe Explorer 2020).
Peck's milk-vetch (*Astragalus pecki*)	-	T	No	Found in very dry sites, on loose sandy soil or pumice between elevation 900 and 1100 meters. Often found along dry water-courses (NatureServe Explorer 2020).

Common Name	Status		Potential to Occur in the Project Area	Habitat Description
	ESA	State		
Pumice grape-fern (*Botrychium pumicola*)	-	T	No	Found in the Paulina Mountains and Crater Lake area of Oregon on pumice gravel without humus at elevations above 2400 meters.
Slender Orcutt grass (*Orcuttia tenuis)*	T	-	No	The species is endemic to northern California and restricted to vernal pool habitats in the Central Valley in clay soils which shrink and swell (NatureServe Explorer 2020).
Whitebark pine (*Pinus albicaulis)*	C	-	No	Occurs in upper subalpine forests of many western North American mountain ranges on thin, rocky, cold soils at or near timberline between elevation 1300 and 3700 meters (NatureServe Explorer 2020)
Fish				
Bull trout (*Salvelinus confluentus*)	T	SC	No	No natural streams or water bodies located within the Project area.
Chinook salmon (*Oncorhynchus tshawytscha*)	-	SC	No	
Coho salmon (Oncorhynchus kisutch)	-	S	No	
Goose Lake sucker (*Catostomus occidentalis lacusanserinus*)	-	S	No	
Great Basin redband trout *(Oncorhynchus mykiss newberrii*)	-	S	No	
Lost River sucker (*Deltistes luxatus*)	E	-	Yes	Both Lost River and shortnose sucker are currently being raised within the fish hatchery on-site.
Shortnose sucker (*Chasmistes brevirostris*)	E	-	Yes	
Miller Lake lamprey (*Entosphenus minimus*)	-	S	No	No natural streams or water bodies located within the Project area.
Modoc sucker (*Catostomus microps*)	-	S	No	
Pacific Lamprey (*Entosphenus tridentata*)	-	S	No	
Pit sculpin (*Cottus pitensis*)	-	S	No	
Crustaceans				
Vernal pool tadpole shrimp (*Lepidurus packardi)*	E	-	No	The species is endemic to the northern portion of the Central Valley, and Sacramento River Delta in California. It is found in a variety of natural, and artificial, seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities (NatureServe Explorer 2020).

SS = Sensitive Species, SC = Sensitive-Critical Species, T = Threatened, E = Endangered, CH = Designated Critical Habitat

Scoping Meeting Minutes

USFWS
Klamath Basin Sucker Assisted Rearing Program
Gone Fishing Hatchery NEPA EA
Kick-Off & Informal Scoping Meeting
May 14, 2020

Meeting Minutes

To:	Attendees	Project:	USFWS Klamath Basin Sucker Assisted Rearing Program Gone Fishing Hatchery
From:	Greg Allington	cc:	File
Date:	May 14, 2020	Contract No.:	140F07190005
Subject:	NEPA Environmental Assessment		

1.0 Introduction

1.1 Purpose

This memorandum documents the meeting held on Thursday, May 14, 2020, via video conference call. The meeting started at 9:00am PT and concluded at approximately 11:00am PT.

1.2 Attendance

Name		
☒ Rob Moriarty, USFWS	☒ Zachary Tiemann, USFWS	☒ Greg Allington, McMillen Jacobs
☐ Manuel Ulibarri, USFWS	☒ Spencer Lodge, USFWS	☒ Bobbi Preite, McMillen Jacobs
☒ Josh Rasmussen, USFWS	☐ Kim Hubbard, USFWS	☒ Jessica Peters, McMillen Jacobs
☒ Daniel Blake, USFWS	☐ Scott Foott, USFWS	☒ Ed Aneshansley, McMillen Jacobs
☒ Javier Linares, USFWS	☐ Karl Lautzenheiser, USFWS	☒ Jeff Heindel, McMillen Jacobs
☐ John Ridilla, USFWS	☒ Anan Raymond, USFWS	☒ Derek Nelson, McMillen Jacobs
☒ John Robles, USFWS	☐ Michael Senn, USFWS	☒ Kelly Mitchell, WCE
☐ Nick Valentine, USFWS	☐ Cynthia Asbell, USFWS	☒ Ragan Driver, WCE
☐ Tim Mayer, USFWS	☐ Richard Grimes, USFWS	
☐ Robert Clarke, USFWS	☐ Mark Yost, USFWS	

1.3 Agenda

The meeting agenda is located in Attachment A.

2.0 Meeting Notes

2.1 Alternatives Analysis

Ed Aneshansley provided an overview of the Alternatives Analysis (AA) and the current design of the project.

2.2 Environmental Assessment

Greg Allington provided an overview of the NEPA Environmental Assessment (EA) process that is outlined in their SOW. The EA will be based on the guidance and regulations outlined in the 2018 USFWS NEPA Draft Reference Handbook. The information in the 100% AA will be incorporated into the EA for the alternatives section as well as to support the purpose and need for the project. The NEPA process will involve the following steps:

- Internal Draft EA: this is the first version of the EA that describes the alternatives, affected environment, and environmental consequences.
- Draft EA: this is the version that will be distributed to the public/agencies for comment.
- Draft EA Public/Agency Comment Period: this is a 30-day comment period on the Draft EA.
- Final EA: this is the version that incorporates any applicable comments from the comment period and is submitted to the Responsible Official.
- FONSI: this is the document that states the decision of the Responsible Official regarding impacts to the environment from the project (only if there are no significant impacts).

Greg Allington stated that there would be several review iterations in between major deliverables for the team to review the EA.

2.3 Other Environmental Assessment Tasks

Waters of the U.S. and Wetlands: McMillen Jacobs will complete the delineation of the project area and it is scheduled for the beginning of June.

Endangered Species Act Compliance: McMillen Jacobs will complete a draft of the intra-agency Section 7 consultation form for the project and provide to USFWS to finalize.

Cultural Resources: McMillen Jacobs has subcontracted Water, Civil, and Environmental Inc. to complete the cultural resources for the project. They will complete a survey of the project area and it is scheduled for the beginning of June.

Topographic Survey: McMillen Jacobs will complete a topographic survey of the site using a drone and also collect aerial videos and photographs. It is scheduled for the beginning of June.

Water Testing: McMillen Jacobs will complete an analysis of the existing water quality data of the onsite geothermal well. USFWS stated they would provide existing data and are going to be collecting additional data for the well and ponds.

Existing Pond Safety Evaluation: McMillen Jacobs will complete a safety evaluation of the existing ponds that may remain as part of the new hatchery project. This evaluation is scheduled for the beginning of June.

2.4 EA Resource Scoping

Greg Allington held a discussion regarding the scoping process for the EA. It was determined that a formal scoping period was not required for the project and an informal scoping discussion would suffice to identify agency and resource concerns.

There were no other federal agencies identified for the project that USFWS would like to invite to become a Cooperating Agency.

The project team on the video meeting agreed that there were sufficient members present to thoroughly identify resource scoping concerns. The resource scoping list discussed during the video meeting is included in Attachment B.

2.5 Project Schedule

Greg Allington gave an overview of the schedule that was provided as part of the meeting agenda.

ATTACHMENT A

MEETING AGENDA

USFWS
Klamath Falls Sucker Hatchery NEPA EA
Kickoff & Informal Scoping Meeting
May 14, 2020

MEETING AGENDA

Item No.	Description	Time*	Lead
1	Introductions and Roll Call	9:00am – 9:05am	Ed/Greg
2	Alternatives Analysis • Alternatives Update • Purpose and Need	9:05am – 9:20am	Ed/Rob
	Environmental Assessment • 2018 USFWS NEPA Draft Reference Handbook • Internal Draft • Draft • Draft Public/Agency Comment Period • Final & FONSI (Assumed)	9:20am – 9:40am	Greg
	Associates Tasks • Waters of the US and Wetlands Delineation • Endangered Species Act Compliance • Cultural Resources Survey • Topographic Survey • Water Testing • Existing Pond Safety Evaluation	9:40am – 10:00am	Greg
3	Environmental Assessment Resource Scoping • Cooperating Agencies • Informal Scoping Process • NEPA Resources Review	10:00am – 10:40am	All
4	Project Schedule • NEPA EA and Other Tasks	10:40am – 10:50pm	Ed/Greg
5	McMillen Jacobs SharePoint	10:50am – 10:55am	Greg
6	Develop Action Item List	10:55am – 11:00am	Greg

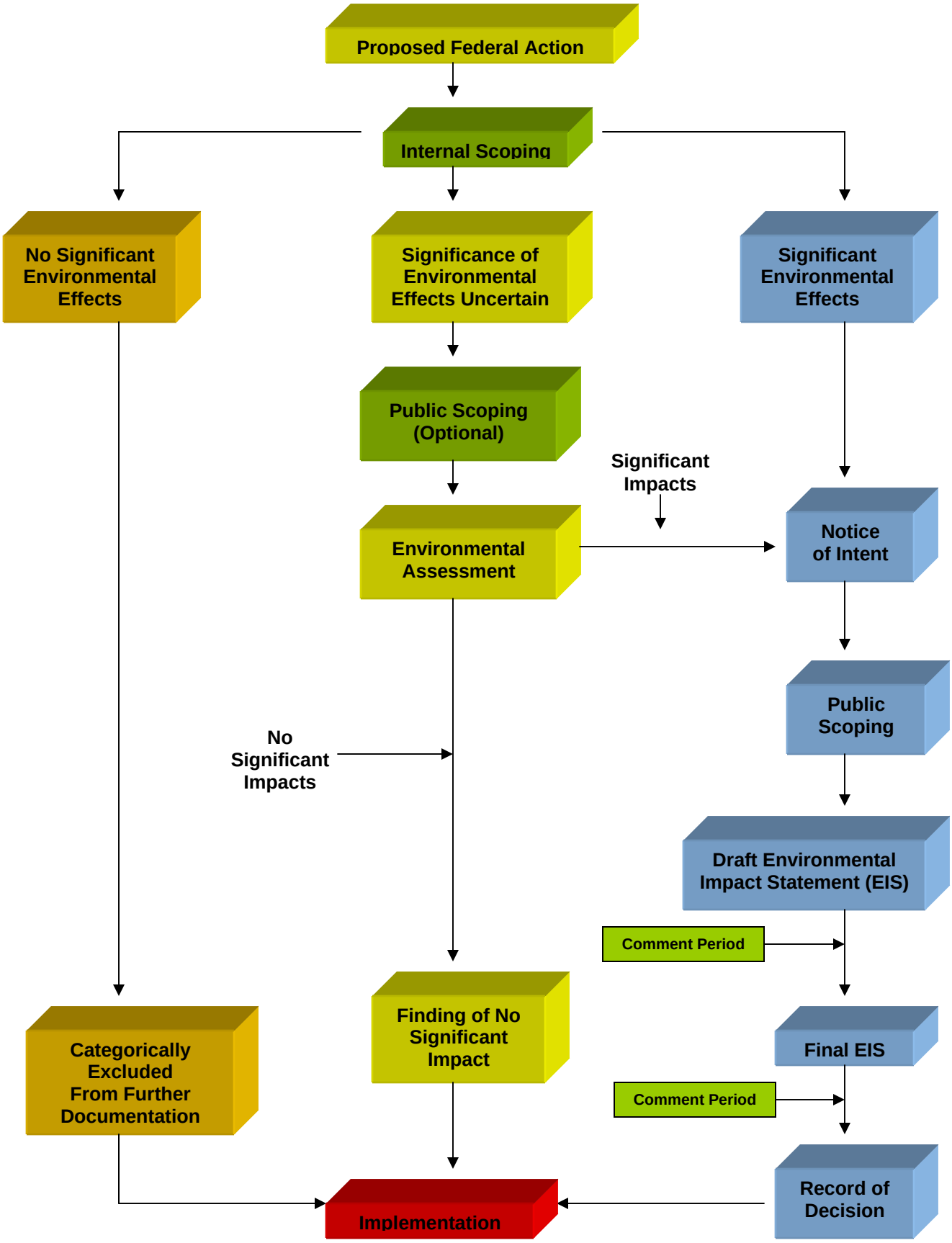
*Pacific Time

Join Microsoft Teams Meeting

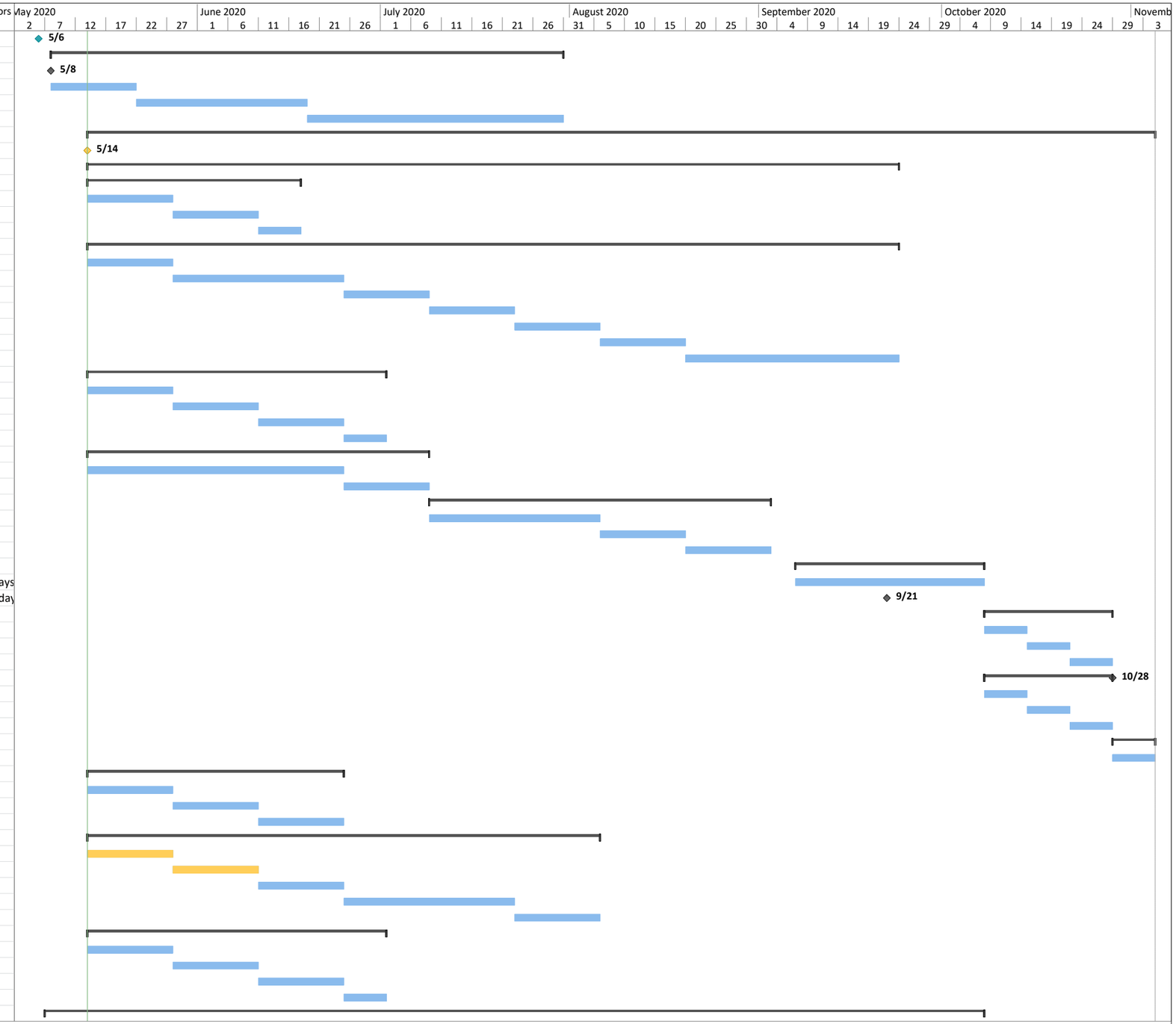
Name		
☐ Rob Moriarty, USFWS	☐ Zachary Tiemann, USFWS	☐ Greg Allington, McMillen Jacobs
☐ Manuel Ulibarri, USFWS	☐ Spencer Lodge, USFWS	☐ Bobbi Preite, McMillen Jacobs
☐ Josh Rasmussen, USFWS	☐ Kim Hubbard, USFWS	☐ Jessica Peters, McMillen Jacobs
☐ Daniel Blake, USFWS	☐ Scott Foott, USFWS	☐ Ed Aneshansley, McMillen Jacobs
☐ Javier Linares, USFWS	☐ Karl Lautzenheiser, USFWS	☐ Jeff Heindel, McMillen Jacobs
☐ John Ridilla, USFWS	☐ Anan Raymond, USFWS	☐ Derek Nelson, McMillen Jacobs
☐ John Robles, USFWS	☐ Michael Senn, USFWS	☐ Kelly Mitchell, WCE
☐ Nick Valentine, USFWS	☐ Cynthia Asbell, USFWS	☐ Ragan Driver, WCE
☐ Tim Mayer, USFWS	☐ Richard Grimes, USFWS	
☐ Robert Clarke, USFWS		

Lease Areas

NEPA DECISION MAKING



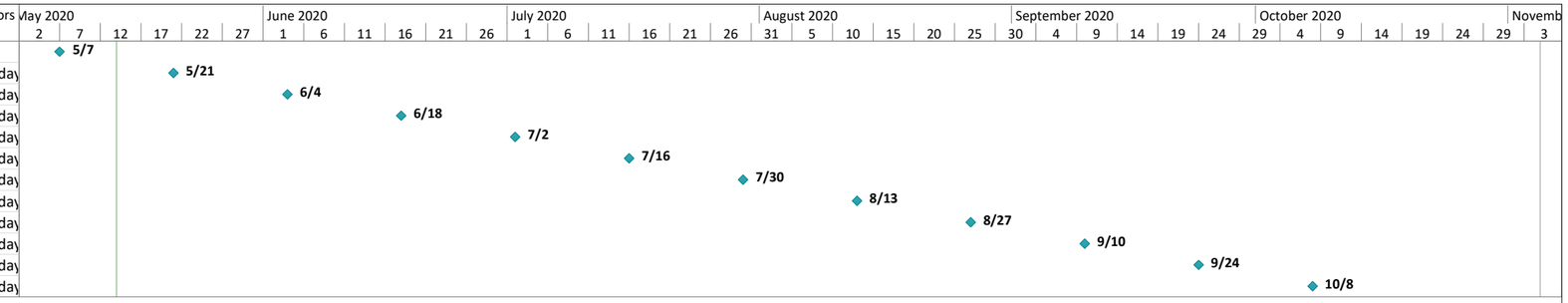
ID	Task Name	Duration	Start	Finish	Predecessors
1	**NOTICE TO PROCEED**	0 days	Wed 5/6/20	Wed 5/6/20	
2	**ALTERNATIVES ANALYSIS**	**60 days**	**Fri 5/8/20**	**Thu 7/30/20**	
3	65% AA	0 days	Fri 5/8/20	Fri 5/8/20	
4	65% AA Review	10 days	Fri 5/8/20	Thu 5/21/20	3
5	100% AA	20 days	Fri 5/22/20	Thu 6/18/20	4
6	35% Design	30 days	Fri 6/19/20	Thu 7/30/20	5
7	**TASK 1-ENVIRONMENTAL ASSESSMENT**	**125 days**	**Thu 5/14/20**	**Wed 11/4/20**	
8	**1.3-Virtual Kick-Off & Scoping Meeting**	0 days	Thu 5/14/20	Thu 5/14/20	
9	**Environmental Resource Clearances**	**95 days**	**Thu 5/14/20**	**Wed 9/23/20**	
10	**Endangered Species Act (ESA) Compliance**	**25 days**	**Thu 5/14/20**	**Wed 6/17/20**	
11	1.6 Draft ESA Report	10 days	Thu 5/14/20	Wed 5/27/20	8
12	1.6 Draft ESA Report Review	10 days	Thu 5/28/20	Wed 6/10/20	11
13	1.6 Final ESA Report	5 days	Thu 6/11/20	Wed 6/17/20	12
14	**TASK 2-CULTURAL RESOURCES SUMMARY & APPLICATIO**	**95 days**	**Thu 5/14/20**	**Wed 9/23/20**	
15	2.2-Cultural Field Survey	10 days	Thu 5/14/20	Wed 5/27/20	8
16	2.2-Draft Cultural Report	20 days	Thu 5/28/20	Wed 6/24/20	15
17	2.2-Draft Cultural Report Review	10 days	Thu 6/25/20	Wed 7/8/20	16
18	2.2-Final Cultural Report	10 days	Thu 7/9/20	Wed 7/22/20	17
19	2.2-Draft SHPO Section 106 Consultation Request Letter	10 days	Thu 7/23/20	Wed 8/5/20	18
20	2.2-SHPO Section 106 Consultation Request	10 days	Thu 8/6/20	Wed 8/19/20	19
21	2.2-SHPO Section 106 Concurrence	25 days	Thu 8/20/20	Wed 9/23/20	20
22	**Waters of the US and Wetland Delineation**	**35 days**	**Thu 5/14/20**	**Wed 7/1/20**	
23	1.4-Field Delineation	10 days	Thu 5/14/20	Wed 5/27/20	8
24	1.5-Draft Delineation Report	10 days	Thu 5/28/20	Wed 6/10/20	23
25	1.5-Draft Delineation Report Review	10 days	Thu 6/11/20	Wed 6/24/20	24
26	1.5-Final Delineation Report	5 days	Thu 6/25/20	Wed 7/1/20	25
27	**Internal Draft EA**	**40 days**	**Thu 5/14/20**	**Wed 7/8/20**	
28	1.7-Administrative Internal Draft EA	30 days	Thu 5/14/20	Wed 6/24/20	8
29	1.7-Administrative Internal Draft EA Review	10 days	Thu 6/25/20	Wed 7/8/20	28
30	**Draft EA**	**40 days**	**Thu 7/9/20**	**Wed 9/2/20**	
31	1.8-Administrative Draft EA	20 days	Thu 7/9/20	Wed 8/5/20	29
32	1.8-Administrative Draft EA Review	10 days	Thu 8/6/20	Wed 8/19/20	31
33	1.8-Draft EA	10 days	Thu 8/20/20	Wed 9/2/20	32
34	**Draft EA Comment Period**	**23 days**	**Mon 9/7/20**	**Wed 10/7/20**	
35	1.9-30 Day Agency/Public Draft EA Period	23 days	Mon 9/7/20	Wed 10/7/20	33FS+2 days
36	1.9-Draft EA Agency/Public Virtual Meeting	0 days	Mon 9/21/20	Mon 9/21/20	33FS+13 day
37	**Final EA**	**15 days**	**Thu 10/8/20**	**Wed 10/28/20**	
38	1.10-Administrative Final EA	5 days	Thu 10/8/20	Wed 10/14/20	35
39	1.10-Administrative Final EA Review	5 days	Thu 10/15/20	Wed 10/21/20	38
40	1.10-Final EA	5 days	Thu 10/22/20	Wed 10/28/20	39
41	**FONSI**	**15 days**	**Thu 10/8/20**	**Wed 10/28/20**	
42	1.10-Draft FONSI	5 days	Thu 10/8/20	Wed 10/14/20	35
43	1.10-Draft FONSI Review	5 days	Thu 10/15/20	Wed 10/21/20	42
44	Final Signed FONSI	5 days	Thu 10/22/20	Wed 10/28/20	43
45	**Administrative Record**	**5 days**	**Thu 10/29/20**	**Wed 11/4/20**	
46	Final Administrative Record	5 days	Thu 10/29/20	Wed 11/4/20	44
47	**TASK 3-SITE SURVEY**	**30 days**	**Thu 5/14/20**	**Wed 6/24/20**	
48	3.2-Site Survey	10 days	Thu 5/14/20	Wed 5/27/20	8
49	3.2-Survey Data	10 days	Thu 5/28/20	Wed 6/10/20	48
50	3.3-Survey Data Analysis	10 days	Thu 6/11/20	Wed 6/24/20	49
51	**TASK 4-WATER TESTING**	**60 days**	**Thu 5/14/20**	**Wed 8/5/20**	
52	4.2-Draft Water Testing Memo	10 days	Thu 5/14/20	Wed 5/27/20	8
53	4.2-Draft Water Testing Memo Review	10 days	Thu 5/28/20	Wed 6/10/20	52
54	4.2-Final Water Testing Memo	10 days	Thu 6/11/20	Wed 6/24/20	53
55	USFWS Water Testing & Laboratory Analysis	20 days	Thu 6/25/20	Wed 7/22/20	54
56	4.2-Revised Final Water Testing Memo	10 days	Thu 7/23/20	Wed 8/5/20	55
57	**Task 4.3-Pond Safety Evaluation**	**35 days**	**Thu 5/14/20**	**Wed 7/1/20**	
58	4.3-Field Pond Safety Evaluation	10 days	Thu 5/14/20	Wed 5/27/20	8
59	4.3-Draft Pond Safety Evaluation Memo	10 days	Thu 5/28/20	Wed 6/10/20	58
60	4.3-Draft Pond Safety Evaluation Memo Review	10 days	Thu 6/11/20	Wed 6/24/20	59
61	4.3-Final Pond Safety Evaluation Memo	5 days	Thu 6/25/20	Wed 7/1/20	60
62	**Meetings**	**110 days**	**Thu 5/7/20**	**Thu 10/8/20**	



Project: USFWS Klamath Falls Sucker Hatchery NEPA EA
Date: Thu 5/14/20

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline	Progress
Split	External Tasks	Inactive Summary	Manual Summary	Path Predecessor Milestone Task	Manual Progress
Milestone	External Milestone	Manual Task	Start-only	Path Predecessor Summary Task	
Summary	Inactive Task	Duration-only	Finish-only	Path Predecessor Normal Task	

ID		Task Name	Duration	Start	Finish	Predecessors
63	✓	Biweekly Meeting	0 days	Thu 5/7/20	Thu 5/7/20	
64		Biweekly Meeting	0 days	Thu 5/21/20	Thu 5/21/20	63FS+10 day
65		Biweekly Meeting	0 days	Thu 6/4/20	Thu 6/4/20	64FS+10 day
66		Biweekly Meeting	0 days	Thu 6/18/20	Thu 6/18/20	65FS+10 day
67		Biweekly Meeting	0 days	Thu 7/2/20	Thu 7/2/20	66FS+10 day
68		Biweekly Meeting	0 days	Thu 7/16/20	Thu 7/16/20	67FS+10 day
69		Biweekly Meeting	0 days	Thu 7/30/20	Thu 7/30/20	68FS+10 day
70		Biweekly Meeting	0 days	Thu 8/13/20	Thu 8/13/20	69FS+10 day
71		Biweekly Meeting	0 days	Thu 8/27/20	Thu 8/27/20	70FS+10 day
72		Biweekly Meeting	0 days	Thu 9/10/20	Thu 9/10/20	71FS+10 day
73		Biweekly Meeting	0 days	Thu 9/24/20	Thu 9/24/20	72FS+10 day
74		Biweekly Meeting	0 days	Thu 10/8/20	Thu 10/8/20	73FS+10 day



Project: USFWS Klamath Falls Sucker Hatchery NEPA EA
Date: Thu 5/14/20

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline		Progress	
Split		External Tasks		Inactive Summary		Manual Summary		Path Predecessor Milestone Task		Manual Progress	
Milestone		External Milestone		Manual Task		Start-only		Path Predecessor Summary Task			
Summary		Inactive Task		Duration-only		Finish-only		Path Predecessor Normal Task			

ATTACHMENT B

EA RESOURCE SCOPING LIST

USFWS Klamath Basin Sucker Assisted Rearing Program Gone Fishing Hatchery
NEPA EA Resource Concerns Informal Scoping
May 14, 2020

Item/Concern	Relevant to the Alterantives? Yes	No	Rationale
Physical Environment			
Prime and Unique Farmland		X	The project area only contains farmland of statewide importance.
Geology / Mineral Resources	X		Diatomite is found within the project area.
Soil and Erosion	X		The project area contains soils rated as moderate or severe.
Surface/Ground Water Quality	X		Ground water and hatchery effluent quality.
Ground Water Quantity	X		A new ground water well may be required for the project.
Waters of the U.S.	X		A waters of the U.S. survey will be conducted in the project area.
Regional Water Mgt. Plans and Coastal Zone Management Areas		X	The project area is not located within a Regional Water Management Plan or Coastal Zone Management Area.
Floodplain Management		X	According to the FEMA map that includes the project area (FEMA 1984), the project area is in Zone C, which indicates minimal flooding.
Wetlands	X		A wetland survey will be conducted in the project area.
Wild and Scenic Rivers		X	There are none in or near the project area according to National Wild and Scenic Rivers System (NWSRS) Map (NWSRS 2014).
Sole Source Aquifers		X	There are none in or near the project area according to the U.S. Environmental Protection Agency (USEPA) Sole Source Aquifer Program Map (USEPA 2013).
Air Quality / Clean Air Act	X		Temporary construction air quality impacts. Permanent project actions will not have a measurable impact to air quality and no permits are required.
Greenhouse Gases / Climate Change		X	The project will have no measurable impact to greenhouse gases or climate change.
Biological Environment			
Special Status Plant Species (Federal and State listed)	X		The project area is located within the known range of the Federally Endangered Applegate's milk-vetch. Further coordination with USFWS will be performed to determine presence.
Forest Resources		X	There are no forested areas within or near the project area.
Noxious Weeds and Invasive Plant Species	X		Construction disturbance increases risk of invasive species becoming established. Best Management Practices (BMPs) will be implemented and measures taken to reduce or eliminate species from becoming established.
Natural Areas / Conservation Areas		X	There are no Natural Areas or Conservation Areas located within or adjacent to the project area.
Riparian Areas		X	There are no riparian areas within or adjacent to the project area.
Essential Fish Habitat		X	There is no essential fish habitat located within or near the project area.
National Wildlife Refuges / Wilderness Areas		X	No National Wildlife Refuges or Wilderness Areas are located in or near the project area according to the Wilderness Areas map (National Wilderness Preservation System [NWPS] 2014) and Wildlife Refuge Map (USFWS 2014b).
Wildlife Habitat	X		Disturbance to general wildlife and wildlife habitat during construction.
Coral Reefs		X	There are no coral reefs within or adjacent to the project area.
Special Status Animal Species (Federal and State listed)	X		The USFWS Species List noted that the gray wolf, North American wolverine, and yellow-billed cuckoo could occur within the project area. Lost River and Shortnose suckers are included in the USFWS list and will be raised at a hatchery within the project area, but there is no habitat within the project area for these two fish species.
Invasive Animal Species	X		Potential for introduction of invasive animal species from increased production of fish at the project.
Migratory Birds / Bald and Golden Eagles	X		USFWS Trust Resource List identified the potential for 14 Birds of Migratory Concern (BOMC) to occur in the area (USFWS 2020).
Livestock Grazing		X	There is no livestock grazing within the project area.

Item/Concern	Relevant to the Alterantives? Yes	No	Rationale
Human Environment			
Socioeconomics		X	There are no communities in or near the project area that will be measurably affected socially or economically from the project actions.
Historic Properties / Cultural Resources	X		A cultural resources survey will be conducted in the project area.
Hazardous Materials	X		All Federal, state, and local laws and regulations will be followed pertaining to pollution and contamination of the environment to prevent pollution of surface water, groundwater, soil, and air with any hazardous materials. Level I compliance will be completed. Hatchery operations of hazardous materials (formalin, antibiotics, petroleum products).
Environmental Justice and Civil Rights		X	No concerns as no area populations will be impacted by project actions.
Public Health and Safety		X	The project is on private property.
Recreation		X	There are no designated recreation areas or trails in project area.
Land Use / Public Access		X	The project area is on private property with no public access.
Visual Resources		X	The project area is classified as Class IV, and there are no high vantage points, scenic overlooks, or scenic driving routes present in the project area.
National Scenic and Historic Trails		X	No National Scenic and Historic Trails located in or near project area according to a National Trails System Map (National Park Service [NPS] 2010).
Natural Areas and Parklands		X	There are no natural areas or parks located within or near the project area.
Transportation Infrastructure		X	There will be no modification or impacts to transportation infrastructure.
Noise	X		Temporary construction-related noise. All county and state noise ordinance laws and regulations will be adhered to. There are no residences or commercial businesses located in or near the project area that are sensitive to noise.
National Landmarks, Monuments, and Historical Sites		X	None located in or near project area based on National Natural Landmarks Map (NPS 2012), National Monument and National Conservation Areas Map (BLM 2015), and National Register of Historic Places (NRHP) data (NPS 2007).
Scientific Resources		X	There are no scientific resources in the project area.

Draft EA Notice of Availability Materials

From: Sawyer, Susan
Subject: Public comment opens on draft hatchery environmental assessment
Date: Monday, September 14, 2020 7:55:49 PM

CAUTION: This email was received from an external source

Greetings to our valued Agency and Tribal partners, media and neighbors:

First and most importantly, I understand many of you are dealing with the unprecedented and dangerous wildfires in our area. Please know that our heartfelt thoughts are with you and your families for safely enduring this extremely difficult time.

The U.S. Fish and Wildlife Service today announced a two week public comment period for a draft Environmental Assessment on the proposed construction of Klamath Falls National Fish Hatchery.
The Service will consider comments from all interested parties received by September 28, 2020.

Information on how to submit comments is available in the News Bulletin, attached and link
here: https://www.fws.gov/klamathfallsfwo/suckers/FInal_KFNFH_pubCmt_Bulletin091420.pdf

Please refer to the draft EA document available
at: https://www.fws.gov/klamathfallsfwo/suckers/USFWS_Klamath_Falls_NFH_Draft_EA.pdf
for specifics on the proposed project for more information.

If you have any questions please reach out to the contacts in the Bulletin.

Regards and stay safe,

Susan

Susan Sawyer, Public Affairs Officer
USFWS IR10/California-Great Basin External Affairs/Klamath Basin
(Klamath Falls, Yreka FWOs; Klamath Basin NWRC)
cell: 916/539 - 7436

U.S. Fish & Wildlife Service

Bulletin

Klamath Falls Fish and Wildlife Office
1936 California Avenue
Klamath Falls, Oregon 97601
Phone: 541-885-8481
https://www.fws.gov/klamathfallsfwo/

September 14, 2020
Contact: Susan Sawyer, Public Affairs
susan_sawyer@fws.gov
916/539-7436

Service accepting comments on proposed construction of Klamath Falls National Fish Hatchery

The U.S. Fish and Wildlife Service today released a draft Environmental Assessment (EA) for the proposed construction of the Klamath Falls National Fish Hatchery in Klamath County. The draft EA addresses potential environmental effects associated with construction of the new facility, which would produce shortnose and Lost River suckers, both listed under the federal Endangered Species Act. The release of the EA opens a two-week public comment period.

The shortnose sucker (*Chasmistes brevirostris*) and Lost River sucker (*Deltistes luxatus*) were listed as endangered in 1988. Both species are long-lived freshwater fish found only in a few lakes in the upper Klamath Basin of southern Oregon and northern California. Since 2001, both species of sucker have declined between 60 and 75 percent.

The 2013 Sucker Recovery Plan calls for the development of a controlled propagation program when populations had declined by 75 percent. Recent estimates indicate shortnose sucker are likely to go extinct within the next 40 years and Lost River suckers will reach critically low levels in 50 years. In 2016, the Klamath Basin Sucker Assisted Rearing Program began rearing both species in captivity to counteract these trends. Early results indicate this could be an effective recovery tool. However, in 2019, a species status assessment concluded that increased rearing capacity is needed to achieve recovery goals.

Construction of the proposed hatchery facility would support the annual production goal of 60,000 juvenile suckers for release in Upper Klamath Lake to bolster declining wild sucker populations in an effort to prevent extinction of the species.

Comments on the draft proposal will be accepted until close of business, September 28, 2020.
Please submit comments either by mail to:
Greg Allington, McMillen Jacobs Associates
1471 Shoreline Drive, Suite 100, Boise, Idaho 83702
or by email: allington@mcmjac.com

For additional information or to request a copy of the draft proposal, please contact:
Greg Allington, McMillen Jacobs Associates by email: allington@mcmjac.com
phone: 208/985-1499
visit: https://www.fws.gov/klamathfallsfwo/news/news.htm to review the draft EA online.

The U.S. Fish and Wildlife Service works with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. For more information about our work and the people who make it happen, visit https://www.fws.gov/cno/ or connect with us via Facebook, Twitter, YouTube, and Flickr.

-FWS-

Klamath Falls Fish and Wildlife Office

Pacific Southwest Region

News and Information

Service accepting comments on proposed construction of Klamath Falls National Fish Hatchery

The U.S. Fish and Wildlife Service is proposing construction of the Klamath Falls National Fish Hatchery to raise federally endangered Lost River and shortnose suckers. The production goal of 60,000 fish for release in Upper Klamath Lake will support declining populations of both species.

An environmental assessment analyzing potential environmental impacts from the proposed construction is available for public review at the link below:

- Environmental Assessment

Public comment on the EA will be accepted through September 28, 2020. For more information on how to submit comments, please refer to the News Bulletin at the link below:

- News Bulletin

Proposal to reintroduce California condor to northern portion of former range

The U.S. Fish and Wildlife Service, the Yurok Tribe and the National Park Service are proposing to reintroduce the California condor to the northern portion of its former range. We are proposing to designate the reintroduced population as a nonessential experimental population under section 10(j) of the Endangered Species Act.

The geographic boundaries of the NEP would include northern California, northwest Nevada and Oregon. The joint FWS-National Park Service environmental assessment, which analyzes the potential environmental impacts associated with the proposed reintroduction and designation of a nonessential experimental population, is available for public review and comment through June 4, 2019 by clicking on either of the links below:

- Federal Register notice
- Region 8 website announcement

Photo Credit - USFWS

Oregon Spotted Frog

Service Designates Critical Habitat for Oregon Spotted Frog in Washington and Oregon

The U.S. Fish and Wildlife Service has finalized critical habitat for the Oregon spotted frog (*Rana pretiosa*) within its known range in Washington and Oregon. Critical habitat is defined by the Endangered Species Act (ESA) as areas vital to the long-term survival of listed species, and today's designation reflects the latest science and information from several public comment periods.

Oregon spotted frog
USFWS

Designation of critical habitat does not affect land ownership or establish a refuge or preserve, and has no impact on private landowners taking actions on their land that do not require federal funding or permits.

Egg mass - USFWS

Critical Habitat
NEWS RELEASE - May 9, 2016 (40kb-pdf)
FEDERAL REGISTER NOTICE - May 11, 2016 (5704kb-pdf)

Final Listing
NEWS RELEASE - August 28, 2014 (108kb-pdf)
FEDERAL REGISTER NOTICE - August 29, 2014 (784kb-pdf)

Species Profile - link to ECOS - Oregon spotted frog
For more information - link to lead office - Washington Fish and Wildlife Office
Oregon Spotted Frog - Frequently Asked Questions - August 29, 2013 (151kb-pdf)

Fisher-West Coast Distinct Population

Fisher, USFS

West Coast Population of Fisher will not be Listed Under ESA

The U.S. Fish and Wildlife Service (Service) announced today, April 14, 2016, that the West Coast Distinct Population Segment (DPS) of fisher does not face the risk of extinction now or in the foreseeable future and therefore does not require the protection of the Endangered Species Act (ESA). The Service made its finding after thoroughly evaluating the best available scientific information gathered from the scientific community, the public and staholders.

NEWS RELEASE - April 14, 2016 (280kb-pdf)
FEDERAL REGISTER NOTICE - April 18, 2016 (856kb-pdf)

FINAL SPECIES REPORT - March 2016 (4189mb-pdf)
SPECIES PROFILE - link to ECOS -
West Coast Distinct Population - Frequently Asked Questions (FAQ) (39kb-pdf)

For more information - link to **LEAD OFFICE** - Yreka Fish and Wildlife Office

Please see the the U.S. Fish and Wildlife Service's Region 8 website for additional information - link to Region 8 CNO office

Modoc Sucker

Modoc Sucker
Photo-USFWS

Modoc Sucker Spawning
2003 - Photo-CDFW

Delisting - Removal from Threatened and Endangered List

The U.S. Fish and Wildlife Service today announced that, thanks to decades of collaborative conservation efforts under the Endangered Species Act (ESA), it is removing the Modoc sucker from the Act's protections. This marks the second-time that a fish has been 'delisted' due to recovery, the Oregon chub having been delisted earlier this year.

The Modoc sucker is a small fish native to the Upper Pit River Watershed in Southern Oregon and Northeastern California. The fish was listed as endangered in 1985 due to habitat loss and degradation from overgrazing, siltation and channelization due to agriculture practices. Predation from non-native fish and loss of genetic integrity due to hybridization with Sacramento suckers were also viewed as threats.

NEWS RELEASE - December 7, 2015 (34kb-pdf)
DELISTING BACKGROUND INFORMATION - November 2015 (42kb-pdf)
FEDERAL REGISTER NOTICE - December 8, 2015 (292kb-pdf)

Post Delisting Monitoring Plan - July 2015 (14529kb-pdf)
Species Report - October 2015 (1218kb-pdf)
Modoc Sucker Distribution - Map July 2013 (1118kb-pdf)
YouTube Video - Discussion

Leona's Little Blue Butterfly

Leona's Little Blue Butterfly
Photo Credit: Will Hatcher, Klamath Tribes

ESA Protections for Leona's Little Blue Butterfly Not Warranted

The U.S. Fish and Wildlife Service announced today that the Leona's Little Blue Butterfly is not warranted for protection under the Endangered Species Act at this time. The butterfly occupies volcanic ash and pumice fields that form non-forested meadows in the vicinity of Sand and Scott Creeks in Klamath County, Oregon.

The Service evaluated the Leona's Little Blue Butterfly for various stressors including impacts from wildfire, climate change, timber management, fire suppression, invasive plants, encroachment of lodgepole pine and effects associated with small and isolated populations. After a thorough evaluation of the best information and data available, the Service concluded that these stressors do not rise to the level of a threat either individually or cumulatively.

NEWS RELEASE - June 22, 2015 (149kb-pdf)
FEDERAL REGISTER NOTICE - June 23, 2015 (250kb-pdf)

Leona's Little Blue Butterfly - Frequently Asked Questions - (FAQ) (217kb-pdf)
Species Report - May 2015 (1.16mb-pdf)
Map: Leona's Little Blue Overview (193kb-pdf)

Bull Trout

Bull Trout Photo
Courtesy of Joel Sartore

Implementation Plans for Bull Trout Recovery

BOISE, Idaho - Efforts to conserve a key cold-water fish species got a boost today when the U.S. Fish and Wildlife Service released the draft Recovery Unit Implementation Plans that will be part of a final recovery plan outlining the conservation actions needed to recover bull trout.

The draft Implementation Plans were developed in collaboration with interested and knowledgeable federal, tribal, state, private, and other parties. Each of the six draft Implementation Plans identifies recovery unit-specific conservation actions needed to address threats such as loss of habitat connectivity and passage barriers, non-native fish competition and predation, and the sometimes adverse effects of land-management practices such as road building, forest management and land conversion.

Bull trout are a cold-water salmonid of relatively pristine stream and lake habitats in western North America. Once abundant in Oregon, Washington, California, Nevada, Idaho and Montana, bull trout are listed as threatened under the Endangered Species Act in the lower 48 states.

NEWS RELEASE - June 2, 2015 (39kb-pdf)
FEDERAL REGISTER NOTICE - June 4, 2015 (181kb-pdf)

Map: Bull Trout Recovery Units - (390kb-pdf)
Draft Klamath Recovery Unit Implementation Plan - (369kb-pdf)
Link to All Six - Draft Bull Trout Recovery Planning Documents
Question and Answers - (286kb-pdf)
Link to main Bull Trout website

PacifiCorp-Klamath Hydroelectric Project-Habitat Conservation Plan

Interim Operations Habitat Conservation Plan for Lost River and Shortnose Suckers

The U.S. Fish and Wildlife Service has issued an incidental take permit (ITP) under the Endangered Species Act (ESA) to PacificCorp, in conjunction with the company's comprehensive plan to conserve the endangered Lost River and shortnose suckers in the Klamath Basin. PacifiCorp is an electric energy-producing company based in Portland, Oregon, that operates seven facilities as part of its Klamath Hydroelectric Project.

Under the terms of the ITP, PacifiCorp will implement avoidance, minimization, and mitigation measures described in its Habitat Conservation Plan (HCP).

NEWS RELEASE - February 20, 2014 (31kb-pdf)
Habitat Conservation Plan - November 20, 2013 (2714kb-pdf)
Environmental Assessment - December 2013 (479kb-pdf)
Findings, Recommendations and Finding of No Significant Impact (FONSI) - December 2013 (542kb-pdf)
Intra-Service Biological Opinion - December 13, 2013 (833kb-pdf)

Lost River and Shortnose Sucker

Lost River Sucker
Spawning - 2008
Photo-USFWS

Revised Recovery Plan

The U. S. Fish and Wildlife Service (Service) announced (April 16, 2013) the release of the final Revised Recovery Plan for the Lost River Sucker (*Deltistes luxatus*) and the Shortnose Sucker (*Chasmistes brevirostris*). **This updated recovery plan replaces the 1993 recovery plan.**

NEWS RELEASE - April 15, 2013
FEDERAL REGISTER NOTICE - April 16, 2013
FINAL Revised Recovery Plan for the Lost River Sucker and Shortnose Sucker - April 15, 2013 (1662kb-pdf)
Lost River and Shortnose Sucker - Factsheet (384kb-pdf)

Designated Critical Habitat for the Lost River and Shortnose Sucker

Juvenile Sucker
Xrays - Photo-USFWS

The U.S. Fish and Wildlife Service announced that it has designated critical habitat for the endangered Lost River sucker and shortnose sucker. Critical habitat was first proposed for these species in 1994, but was never completed due to higher conservation priorities for the listed sucker.

NEWS RELEASE - December 10, 2012
FEDERAL REGISTER NOTICE December 11, 2012 (2226kb-pdf)
Economic Analysis (3454kb-pdf)
References Cited
Final Memo

Critical Habitat Maps
Unit 1-Lost River Sucker
Unit 1-Shortnose Sucker
Unit 2-Lost River Sucker
Unit 2-Shortnose Sucker

2013 Proposed Klamath Project Operations - Joint Biological Opinion (National Marine Fisheries Service and the United States Fish and Wildlife Service)

2013 Final Klamath Project Biological Opinion (5/31/2013 7985kb-pdf)

Lost River Sucker
Upper Klamath Lake
2010 - Photo-USFWS

Shortnose Sucker
Williamson River
2011 - Photo-USFWS

Last updated: September 14, 2020

https://www.heraldandnews.com/news/local_news/fish-and-wildlife-accepting-public-comments-on-proposed-sucker-hatchery/article_aeba3573-37df-5bb1-bcff-3625ba2f6bfb.html

FEATURED TOP STORY

Fish and Wildlife accepting public comments on proposed sucker hatchery

By ALEX SCHWARTZ H&N Staff Reporter
Sep 18, 2020

Tired of seeing surveys on articles? If you are a subscriber, simply log in or Subscribe now!

A juvenile sucker in one of the U.S. Geological Survey's Upper Klamath Lake mesocosms. Fish released by the Fish and Wildlife Service's Gone Fishing sucker hatchery are slightly more mature than this when released into the lake.

H&N Photo by Alex Schwartz

The U.S. Fish and Wildlife Service has opened a public comment period concerning the proposed construction of a new hatchery to rear endangered C'waam and Koptu (suckers). Community members may submit comments through September 28.

The proposed hatchery would significantly increase FWS's rearing capacity for suckers to align more closely with goals stated in the 2013 Sucker Recovery Plan. The service released a draft environmental assessment (EA) Monday detailing the expected impacts of the new facility and its construction on its immediate environment. Public comments should concern information communicated in this document.

The EA is part of an approval process laid out in the National Environmental Policy Act, which requires federal agencies to analyze the environmental impacts of their proposed actions. NEPA requirements must be satisfied in order for the project to continue.

Gone Fishing, the current sucker hatchery, sits at the foot of the Klamath Hills on Lower Klamath Lake Road and is leased from a private landowner. It began rearing fish in 2016 and released its first class of 2,500 sub-adults (too old to be juveniles but too young to have reached sexual maturity) into Upper Klamath Lake in 2018. The following year saw 5,000 fish released, and this year the service plans to release between 10,000 and 12,000. Though the facility has been improving its techniques to rear more suckers every year, a 2019 study found that 60,000 fish need to be released yearly in order to support the species' dwindling populations.

Once released into the lake, hatchery suckers take several years to reach sexual maturity, at which point they would be detected by PIT tag sensors at known spawning habitats in the watershed. Some individuals from 2018 are just starting to be detected, though it's still too early to say how many of that initial class survived. This year, having a much higher number of reared fish allows FWS to release individuals at different times of the year to determine whether seasonal conditions (especially algal blooms) impact their overall survival.

FWS's proposed action involves constructing a larger facility on the same land that would accommodate more fish in accordance with the recovery plan (according to the EA, other possible locations for the new hatchery would result in more impacts to the environment). Like any construction project, this would have temporary negative effects, such as dust and disturbances to birds in the area. There's also a possibility of disturbing archaeological and cultural sites, as the facility is located on the historic shoreline of Lower Klamath Lake, traditional homelands of the Modoc people. While operating, the facility gets its water from a geothermal well on the property and actually sends tail water to irrigation canals, though its proposed higher occupancy means that increased water pollution from fish waste will have to be monitored and mitigated.

Overall, the EA did not find any significant environmental impacts for the expansion, but public comments could point out areas the service may have missed or mischaracterized when producing the evaluation. Once they receive and evaluate those comments, FWS will produce a final EA unless the comments warrant a more in-depth environmental impact statement. Once completing the NEPA process, they'll be able to design the new hatchery.

Those interested in submitting public comments on FWS's draft environmental assessment should read the assessment here and send any comments by mail before close of business on September 28 to: Greg Allington, McMillen Jacobs Associates, 1471 Shoreline Drive, Suite 100, Boise, Idaho 83702, or by email to: allington@mcmjac.com

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Alex Schwartz

Waters of the U.S. and Wetlands Delineation Report

Klamath Basin Sucker Assisted Rearing Program Gone Fishing Hatchery

Waters of the U.S. and Wetlands Delineation Report

Report Status (Final)

July 31, 2020

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Distribution

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McMillen Jacobs Associates has appreciated the opportunity to work with the U.S. Fish and Wildlife Service (USFWS) on this project. If you have any questions or concerns regarding this report, please contact:

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1.0 Introduction

In 2016, a partnership was established between the U.S. Fish and Wildlife Service (USFWS) and the private landowner of a fish rearing site (Gone Fishing Hatchery), to establish the current Klamath Basin Sucker Assisted Rearing Program (KBSARP) on the property using the existing facility water source, ponds, and some hatchery infrastructure. The KBSARP's success on this property has led to a potential long-term lease agreement to enable the expansion of KBSARP's production capacity.

McMillen Jacobs Associates was retained by the USFWS to complete non-wetland waters of the U.S. (herein referred to as "waters of the U.S.") and wetlands delineation services at the Gone Fishing Hatchery in Klamath County, Oregon (Appendix A-Map 1). This report describes in detail the potential waters of the U.S. and wetlands identified during the delineation. The delineation presented in this report is a preliminary jurisdictional observation of waters of the U.S. and wetlands. The United States Army Corps of Engineers (USACE) will provide the final jurisdictional determination for waters of the U.S. and wetlands located within the surveyed area (Survey Area). The Survey Area encompasses the potential long-term lease area, a 50-buffer, and drainage areas leading off-site for the expansion of KBSARP and is depicted on the maps in Appendix A.

1.1 Project Location

The Gone Fishing Hatchery is located at 3875 Lower Klamath Lake Road near the town of Merrill, approximately 3.2 miles north of the Oregon-California State line and 10 miles south of Klamath Falls in Klamath County, Oregon (Appendix A-Map 1). The Klamath County Tax Parcels are 4009-02700-00102 and 4009-03400-00100.

1.2 Scope of Work

The scope of work associated with this waters of the U.S. and wetlands delineation included the following elements:

1. Review background information pertaining to the Survey Area including relevant and readily available documents to evaluate the Gone Fishing Hatchery site conditions;
2. Conduct a pedestrian survey within the Survey Area and delineate waters of the U.S. and wetlands features identified according to the appropriate USACE waters of the U.S. and wetlands delineation manuals; and
3. Prepare a draft and final report describing the methods used and the results of the delineation.

1.3 Conditions at the Time of Delineation

This report is based on conditions that existed at the time the delineation was performed on June 3 and 4, 2020. If changes are made to the Survey Area after the date of the delineation, a wetland biologist should be consulted to review the investigation and recommendations so that written amendments or affirmation can be provided as appropriate.

2.0 Methods

This section summarizes the methods used in determining the presence of the ordinary high water mark (OHWM) of waters of the U.S. as well as wetlands and the determination of their associated wetland boundary within the Survey Area.

2.1 Document Review

A review of available documents pertaining to the project was conducted prior to visiting the site. This review assisted with directing the focus of the waters of the U.S. and wetlands delineation to potential critical aquatic features. The following documents were reviewed:

- Historical and current aerial photos (1994, 2000, 2005, 2011, 2016, and 2019);
- USFWS National Wetlands Inventory (NWI) maps (USFWS 2020) (Appendix A-Map 2);
- NRCS Soil Survey of Klamath County, Oregon (NRCS 2019) (Appendix A-Map 3);
- United States Geological Survey (USGS) topographic maps (USGS 1957, 1986 and 2020);
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) (FEMA 1984); and
- Other available general background information provided by USFWS.

2.2 Waters of the U.S. Delineation Methodology

Streams, lakes, and reservoirs were delineated in the Survey Area according to their OHWM in accordance with the guidance set forth by the USACE in their delineation manual titled *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (USACE 2008a). A complete description of the methodology is described in detail in Appendix D.

2.3 Wetland Delineation Methodology

The formal wetland delineation effort in the Survey Area followed the guidance set forth in the following documents:

- 1987 USACE Wetland Delineation Manual (Environmental Laboratory 1987);
- 2007 Clean Water Act Jurisdiction – Rapanos vs. United States and Carabell vs. United States (Rapanos 2007);
- 2008 USACE Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (USACE 2008b); and
- 2010 Field Indicators of Hydric Soils in the United States (NRCS 2010).

The wetland delineation manual and supplement listed above follow the three-parameter approach for making wetland determinations, such that positive indicators of wetlands must be present for each of the following parameters: 1) vegetation, 2) soils, and 3) hydrology. Each of these three parameters is described in detail in Appendix D.

2.4 Waters of the U.S. and Wetlands Characterization

The waters of the U.S. and wetlands segments delineated were characterized according to their Cowardin (Cowardin *et al.* 1979) classification. The Cowardin classification system categorizes wetlands and deepwater habitats according to five separate systems: Marine, Estuarine, Riverine, Lacustrine, and Palustrine. These systems are then stratified into subsystems based on the plant community type. These systems are further stratified into classes and subclasses based on substrate material. Each class and subclass is then annotated with specific modifiers for water regimes, water chemistry, soil, and other special characteristics. The USFWS uses this classification system on their NWI maps and it is used in this report to describe the general structure of waters of the U.S. and wetlands.

The wetlands identified in this project were also classified according to their hydrogeomorphic (HGM) characteristics in order to determine their location and function within the watershed. HGM classifications include the following:

- Depressional,
- Riverine,
- Lacustrine fringe,
- Slope,
- Flats, and
- Freshwater tidal.

2.5 Field Methods

The Survey Area was investigated for indicators of an OHWM and wetland parameters by McMillen Jacobs Associates wetland biologist (Greg Allington) on June 3 and 4, 2020. If one of the three wetland parameters (hydrophytic vegetation, hydric soils, or wetland hydrology indicators) was observed, then a more detailed examination of the area was performed. Upon discovery of all three wetland parameters adjacent to an upland area, the boundary line of the wetland was identified and followed until the delineation was complete. In general, the presence of hydrophytic vegetation and/or wetland hydrology indicators was the primary visual indicator used to determine the boundaries of the wetland, with hydric soil indicators used secondarily to confirm the wetland boundary. If a point on the wetland boundary was not clearly identifiable by either hydrophytic vegetation or wetland hydrology indicators, then soil pits were dug in order to determine the wetland boundary line. Soil pits extended approximately 18 inches below ground surface and were left open for a minimum of five minutes during the examination. Wetland boundaries were recorded in the field at the time of the delineation.

Paired sample plots were established at various locations along the wetland perimeter to aid in the wetland determination. These sample plots were given a label (ex. SP-1) and the locations recorded. The sample plots consisted of examining the vegetation, soils and wetland hydrology indicators. The vegetation was assessed within an approximate 15 to 20-foot radius of the sample plot for trees and shrubs and an approximate 5-foot radius for herbaceous species. Soils were classified according to the Munsell® Soil-Color Chart and wetland hydrology indicators were examined for presence within 12 inches of the ground surface. Typically, one paired sample plot was established within the wetland unit for each vegetation

community or hydrologic regime observed at the time of the delineation. The results of the sample plots were recorded and are located in Appendix C.

The site was also investigated for indicators of OHWM characteristics. If flowing water or a dry streambed was observed, additional investigations were performed upstream and downstream to locate the source of the water and/or the confluence with another stream. Specific physical characteristics of the streams were examined in order to facilitate locating the OHWM.

The waters of the U.S. and wetlands delineation was conducted on June 3 and 4 of 2020. Wetland points, sample plots, and OHWM points were recorded in the field at the time of the delineation using a MobileMapper 120 from Spectra Precision with GLONASS with antenna (±5 foot accuracy). A sketch of the waters of the U.S. and wetlands delineation was prepared depicting the locations of these boundaries and sample plots. The delineation map is presented in Appendix A-Map 4. A photographic record of the waters of the U.S., wetlands, sample plots, and various other portions of the Survey Area are attached in Appendix B.

3.0 Results

The results of the waters of the U.S and wetlands delineation, including characterization and classification of identified on-site critical aquatic features, are included below.

3.1 Document Review

The following information was obtained during the document review prior to the waters of the U.S. and wetlands delineation:

- Historical and current aerial photos
  - 1994, 2000, 2005, 2011, 2016, and 2019 aerial photographs were examined to determine changes in land use and hydraulic patterns, vegetated areas and possible locations of standing water or saturated soils. The Survey Area appears to be undeveloped uplands in the 1994 aerial. The Survey Area in the 2000 and 2005 aerials show numerous fish holding ponds and one excavated larger pond. The 2011 and 2016 aerials show additional smaller fish holding ponds on the site. The 2019 aerial shows the addition of a hatchery building and the conversion of smaller fish holding ponds to four large ponds in the northern portion of the Survey Area.
- USFWS NWI maps (USFWS 2020) (Appendix A-Map 2)
  - No NWI wetlands are located within the Survey Area.
- USDA NRCS Soil Survey of Soil Survey of Klamath County, Oregon (NRCS 2019) (Appendix A-Map 3)
  - The survey area consists of 9C - Capona loam. The soil is classified as not hydric and a detailed description of this soil unit is provided in section 3.2.1.
- USGS 7.5-minute and 15X15-minute topographic maps (USGS 1957, 1986 and 2020)
  - The Survey Area is shown as undeveloped in the 1957 map. A geothermal well is shown within the Survey Area in the 1986 and 2020 maps.
- FEMA FIRMs (FEMA 1986a and 1986b)
  - The Survey Area is shown on the FEMA maps as being located in Zone C. Zone C is an area of minimal flood hazard, outside of the special flood hazard areas, and higher than the elevation of the 0.2% annual-chance flood (500-year flood).

3.2 Field Investigations and Site Description

The objective of the waters of the U.S. and wetlands delineation was to determine their extent within the Survey Area. McMillen Jacobs Associates wetland biologist (Greg Allington) performed the waters of the U.S. and wetlands delineation field work between on June 3 and 4, 2020. The weather was sunny and dry during the delineation, with temperatures ranging from 60°F in the morning and 80°F in the afternoon.

The Survey Area was examined for signs of waters of the U.S. and wetlands indicators. The results of the investigation revealed the presence of four wetlands (Wetlands A through D) within the Survey Area. NWI

maps are produced from the interpretation of aerial photographs that require field verification; however, there were no areas mapped as NWI wetlands (Appendix A-Map 2) within the Survey Area.

The wetland delineation consisted of determining the boundary between wetland and upland areas. The approximation of this boundary line typically consisted of identifying a topographic break and correlating the break with shifts in vegetation from hydrophytic to upland species. The plant species observed during field delineations within the tree, shrub, herb, and woody vine stratum, and their category of upland or hydrophytic, are summarized in Table 3-1 below.

Table 3-1. Plant Species Observed

Species Common Name	Species Scientific Name	Wetland Indicator Status
Tree Stratum		
Russian olive	*Elaeagnus angustifolia*	FAC
Shrub Stratum		
Gray rabbitbrush	*Chrysothamnus nauseosus*	UPL
Peachleaf willow	*Salix amygdaloides*	FACW
Herb Stratum		
Canada thistle	*Cirsium arvense*	FACU
Cattail	*Typha latifolia*	OBL
Climbing nightshade	*Solanum dulcamara*	FAC
Cheatgrass	*Bromus tectorum*	UPL
Crested wheatgrass	*Agropyron cristatum*	UPL
Curly dock	*Rumex crispus*	FAC
Hard-stem bulrush	*Schoenoplectus acutus*	OBL
Kochia	*Kochia scoparia*	UPL
Lamb's quarter	*Chenopodium album*	FACU
Pigweed	*Amaranthus retroflexus*	FACU
Prickly lettuce	*Lactuca serriola*	UPL
Ryegrass	*Lolium perenne*	FAC
Scotch thistle	*Onopordum acanthium*	UPL
Stinging nettle	*Urtica dioica*	FAC
Tumble tustard	*Sisymbrium altissimum*	FACU
Clasping pepperweed	*Lepidium perfoliatum*	UPL
Woody Vine Stratum		
None observed		

OBL = Obligate Wetland, FACW = Facultative Wetland, FAC = Facultative, FACU = Facultative Upland, UPL = Obligate Upland

The growing season for a region is dependent upon climate, precipitation, and topography. The following indicators of biological activity were observed throughout the entire site indicating that the delineation was performed during the growing season: herbaceous plant persistence, and green leaves on shrubs and trees. The waters of the U.S. and wetlands delineation was conducted during the official growing season and soil temperatures were not taken for this delineation project.

3.2.1 Soil Survey Data

Soil data for the Survey Area was obtained from the NRCS web soil survey mapper (NRCS 2019) and is summarized in Table 3-2 below. A soil survey map is provided in Appendix A-Map 3.

Table 3-2. Survey Area Soils

Soil Name	Description	Hydric Soil Rating*
Capona loam 5%-15% slopes (9C)	Soils consist of 67% Capona and similar soils that formed on structural benches. Soils are alluvium and residuum derived from tuff, diatomite, and basalt. A typical soil profile may include loam over gravelly sandy clay loam over unweathered bedrock.	0

* Rating indicates the percentage of the map unit that meets the criteria for hydric soils

3.3 Waters of the U.S. Characterization and Classification

An OHWM delineation was completed within the Survey Area to identify the limits of jurisdictional waterways. The OHWM often corresponds to the water surface elevation of the 2-year flood return period and woody vegetation does not typically grow below this mark. There were no waters of the U.S. delineated within the Survey Area.

Five ditches and two basins were identified during the delineation that are solely used to convey and/or store water from existing hatchery facility operations (Appendix A-Map 4). These ditches and basins have no OHWM characteristics and are not associated with any natural surface water runoff. Therefore, these ditches and basins are not considered jurisdictional waters of the U.S. A summary of the ditches and basins are provided in in the sections below.

3.3.1 Ditch 1

Ditch 1 originates from excess flow being pumped from the existing geothermal well. When the holding tank next to the well completely fills the water drains down this ditch into the Lower Klamath Lake Road drainage ditch and eventually flows northwest into Wetland B. This ditch is approximately two to three feet wide and ~1,155 feet long but there were no signs of an OHWM nor was any hydrophytic vegetation present within the ditch limits. The ditch is typically dry expect when there is excessive rainfall, snowmelt, or water being produced from the existing geothermal well.

3.3.2 Ditch 2

Ditch 2 drains the 22 ponds adjacent to Lower Klamath Lake Road and is fed via overflow pipes in each pond. This ditch drains to the northwest through a culvert under the access road and into Wetland B. This ditch is approximately two feet wide and ~645 feet long but there were no signs of an OHWM nor was any hydrophytic vegetation present within the ditch limits. The ditch only flows when the ponds are in use and discharging water.

3.3.3 Ditch 3

Ditch 3 originates from existing USFWS hatchery building discharge and only flows when the hatchery is utilizing water. This ditch drains to the northwest into Wetland A and then through a culvert under the access road and into Wetland B. This ditch is approximately two to three feet wide and ~645 feet long but there were no signs of an OHWM nor was any hydrophytic vegetation present within the ditch limits until it reaches Wetland A.

3.3.4 Ditch 4

Ditch 4 drains the 24 ponds in the middle of the site and is fed via overflow pipes in each pond. This ditch drains to the southwest into Wetland B. This ditch is approximately three to five feet wide and ~280 feet long but there were no signs of an OHWM nor was any hydrophytic vegetation present within the ditch limits. The ditch only flows when the ponds are in use and discharging water.

3.3.5 Ditch 5

Ditch 5 originates from existing private landowner hatchery building discharge and only flows when the hatchery is utilizing water. This ditch drains to the southwest into Wetland C and then through Ditch 4 into Wetland B. This ditch is approximately two to three feet wide and ~160 feet long but there were no signs of an OHWM nor was any hydrophytic vegetation present within the ditch limits until it reaches Wetland C.

3.3.6 Basins

There are two artificially created basin on the western portion of the site that hold discharge water from the 4 large ponds on-site. Water is only present in either of these basins when the ponds are being drained. Each basin has an excavated channel draining to the south and water eventually drains into Wetland D when the basins reach maximum capacity. There were no signs of an OHWM nor was any hydrophytic vegetation present within either basin limits.

3.4 Wetland Characterization and Classification

The wetland delineation identified four wetlands within the Survey Area (Appendix A-Map 4) and photographs are provided in Appendix B. The following sections describe the wetlands delineated and their associated classification and a summary is provided in Table 3-3.

Table 3-3. Wetland Classification and Size

Wetland	Cowardin Classification					HGM	Size[1] (Acres)
	System	Class	Subclass	Water Regime	Modifier		
A	Palustrine (P)	Emergent (E)	Persistent (1)	Artificially Flooded (K)	Excavated (x)	Slope	0.008
B	P	E	1	K	x	Depressional	0.58
C	P	E	1	K	x	Slope	0.05
D	P	E	1	K	x	Depressional	0.99

3.4.1 Wetland A

Wetland A is located along Ditch 1 just south of the main access road entrance and is approximately 0.008 acres (349 square feet) in size (Appendix A-Map 4). This wetland drains into Wetland B via a culvert. The Cowardin classification for this wetland is palustrine, emergent, persistent, artificially flooded, excavated (PEM1Kx) and its HGM classification is slope. The wetland delineation generally followed a steep topographic break toward the bottom of the slope, changes in wetland vegetation to upland species, and the presence of wetland hydrology indicators.

Vegetation

Dominant vegetation within the wetland included cattail (*Typha latifolia*, OBL) and climbing nightshade (*Solanum dulcamara*, FAC). The vegetation shifted to upland species consisting primarily of clasping pepperweed (*Lepidium perfoliatum*), cheatgrass (*Bromus tectorum*), and other mixed upland grasses, starting at the base of the topographic break.

Soils

Soils within the wetland exhibited low chroma, and a hydrogen sulfide hydric soil indicator was present. Soil texture consisted of silty sand.

Hydrology

Hydrology was present in Wetland A during the delineation in the form of a high water table, saturated soils within 12 inches of the ground surface, adjoining surface waters, and hydrogen sulfide odor. Ditch 3 has surface flow draining into this wetland when the USFWS hatchery building is discharging high volumes of water. There were no signs of hydrology in the upland and the soil was not saturated.

3.4.2 Wetland B

Wetland B is located within one of the facilities excavated effluent ponds, just north of the main access road into the facility and is approximately 0.58 acres (25,364 square feet) in size (Appendix A-Map 4). This wetland drains under Lower Klamath Lake Road via a culvert. The Cowardin classification for this wetland is palustrine, emergent, persistent, artificially flooded, excavated (PEM1Kx) and its HGM classification is depressional. The wetland delineation generally followed a topographic break toward the bottom of the slope, changes in wetland vegetation to upland species, and the presence of wetland hydrology indicators.

Vegetation
Dominant vegetation within the wetland included cattail (*Typha latifolia*, OBL) and hard-stem bulrush (*Schoenoplectus acutus*, OBL). The vegetation shifted to upland species consisting primarily of clasping pepperweed (*Lepidium perfoliatum*) and other mixed upland grasses, starting at the base of the topographic break.

Soils
Soils within the wetland exhibited low chroma, depleted matrix, and a hydrogen sulfide odor. Soil texture consisted of silt.

Hydrology
Hydrology was present in Wetland A during the delineation in the form of a high water table, saturated soils within 12 inches of the ground surface, adjoining surface waters, inundation visible on aerial imagery, water-stained leaves, water marks, and hydrogen sulfide odor. The private and USFWS hatchery areas infrastructure all drain into this wetland unit. There were no signs of hydrology in the upland and the soil was not saturated.

3.4.3 Wetland C

Wetland C is located along Ditch 5 and is approximately 0.05 acres (2,028 square feet) in size (Appendix A-Map 4). This wetland drains into Wetland B via a Ditch 4. The Cowardin classification for this wetland is palustrine, emergent, persistent, artificially flooded, excavated (PEM1Kx) and its HGM classification is slope. The wetland delineation generally followed a topographic break toward the bottom of the slope, changes in wetland vegetation to upland species, and the presence of wetland hydrology indicators.

Vegetation
Dominant vegetation within the wetland included cattail (*Typha latifolia*, OBL). The vegetation shifted to upland species consisting primarily of cheatgrass (*Bromus tectorum*) and other mixed upland grasses, starting at the base of the topographic break.

Soils
Soils within the wetland exhibited low chroma, with 1 cm of much, and a hydrogen sulfide odor. Soil texture consisted of sandy silt.

Hydrology
Hydrology was present in Wetland A during the delineation in the form of a high water table, saturated soils within 12 inches of the ground surface, surface water, thin muck surface, and hydrogen sulfide odor. The private hatchery area infrastructure drains into this wetland unit. There were no signs of hydrology in the upland and the soil was not saturated.

3.4.4 Wetland D

Wetland D is located within one of the facilities excavated effluent ponds just north of Wetland B and is approximately 0.99 acres (43,196 square feet) in size (Appendix A-Map 4). This wetland drains into Wetland B via a culvert and Ditch 4. The Cowardin classification for this wetland is palustrine, emergent, persistent, artificially flooded, excavated (PEM1Kx) and its HGM classification is depressional. The

wetland delineation generally followed a steep topographic break toward the bottom of the slope, changes in wetland vegetation to upland species, and the presence of wetland hydrology indicators.

Vegetation

Dominant vegetation within the wetland included cattail (*Typha latifolia*, OBL) and curly dock (*Rumex crispus*, FAC). Approximately 60% of the wetland consisted of open water. The vegetation shifted to upland species consisting primarily of clasping pepperweed (*Lepidium perfoliatum*), cheatgrass (*Bromus tectorum*), and other mixed upland grasses, starting at the base of the topographic break.

Soils

Soils within the wetland exhibited low chroma, with a thick dark surface, and a hydrogen sulfide odor. Soil texture consisted of silt.

Hydrology

Hydrology was present in Wetland D during the delineation in the form of a high water table, saturated soils within 12 inches of the ground surface, surface water, inundation visible on aerial imagery, oxidized rhizospheres on living roots, water marks, and hydrogen sulfide odor. There were no signs of hydrology in the upland and the soil was not saturated.

3.5 Off-Site Drainage

Once water leaves the Gone Fishing Hatchery is flows underneath Lower Klamath Lake Road via a 40-inch culvert on the downstream property. A small intake structure has been installed that feeds into a buried pipeline that travels downhill to an open pond located on the downstream property. Water flows out of this pond into a small irrigation ditch which eventually flows into the irrigation S Canal that feeds the Klamath Basin irrigation system that also has connectivity to the Klamath River, which is a jurisdictional water of the U.S. A map depicting this drainage course is located in Appendix A-Map 5.

4.0 Conclusions

McMillen Jacobs Associates performed a waters of the U.S. and wetlands delineation within the Survey Area for the USFWS KBSARP project in Klamath County, Oregon. The delineation identified four (4) wetlands (Wetland A through D) and zero (0) waters of the U.S. within the Survey Area that are considered jurisdictional. The delineation identified five (5) ditches and two (2) basins within the Survey Area that are not considered jurisdictional. It is up to the USACE to make the official jurisdictional determination for waters of the U.S. and wetlands identified during this delineation. The delineation was performed to help the USFWS identify the extents of critical aquatic features that may be impacted from the proposed project actions within the Survey Area. The boundaries of these features are depicted in Appendix A-Maps. There are no hydrologically isolated wetlands and all wetlands delineated may be considered jurisdictional by the USACE.

5.0 References

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Appendix A

Project Maps

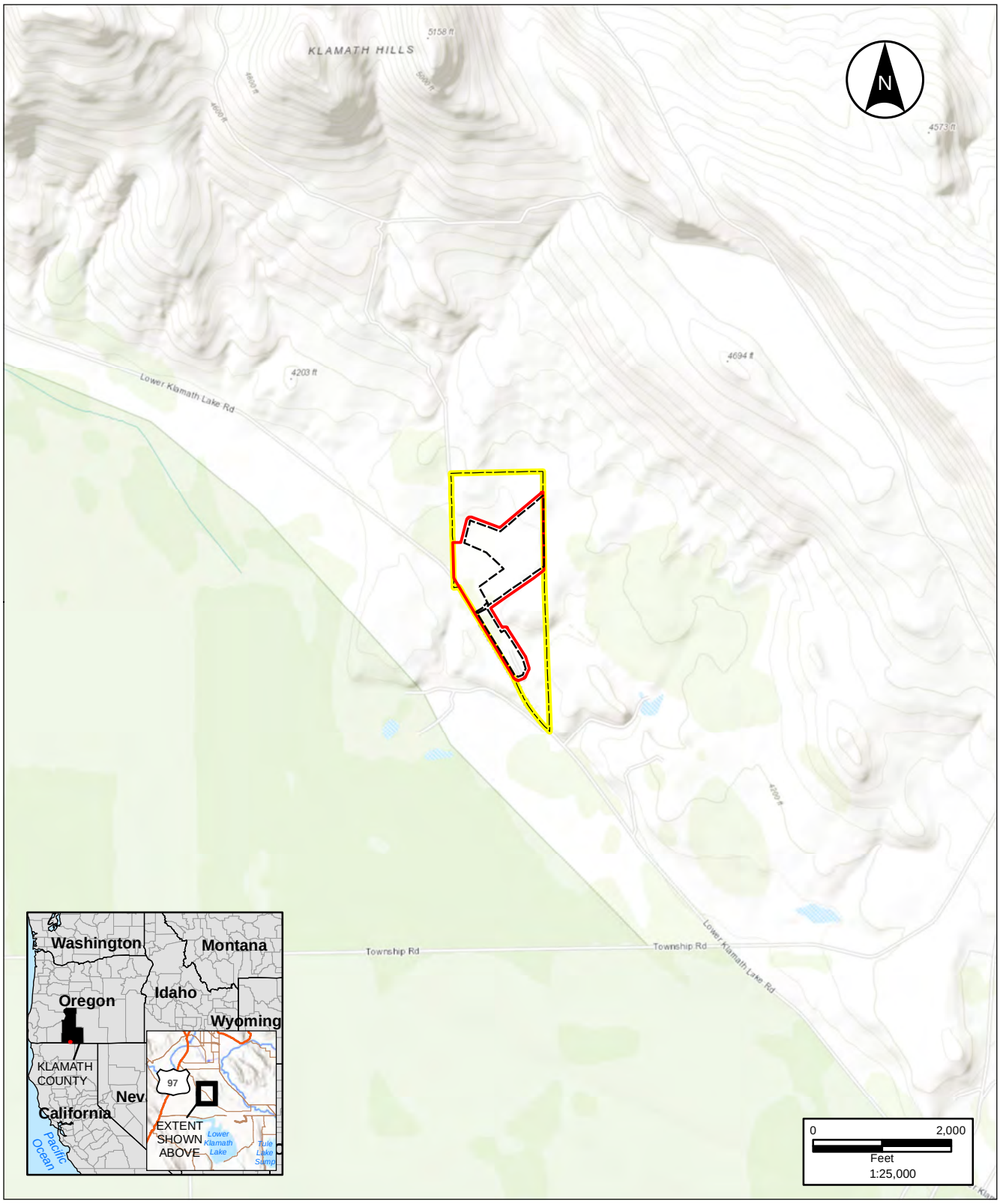
Map 1: Vicinity

Map 2: NWI

Map 3: Soils

Map 4: Delineation

Map 5: Off-Site Drainage



NAD 1983 UTM Zone 10N
Source: Esri, USGS

Legend

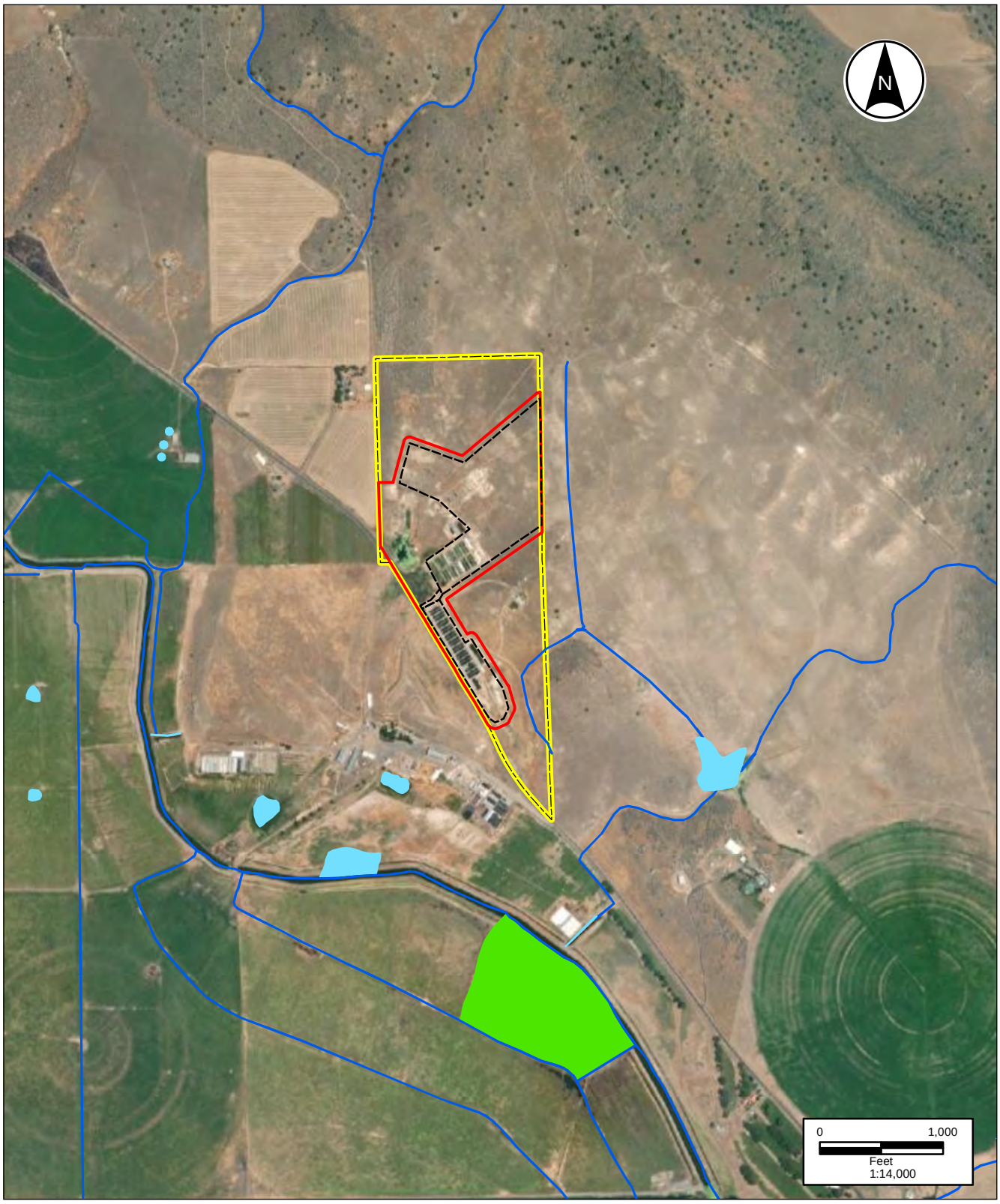
- USFWS Lease Area
- Survey Area
- Property Boundary

Map 1

Location

USFWS Klamath Basin Sucker Assisted Rearing Program
Waters of the US & Wetlands Delineation

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\Wetland_Delineation_Maps\Figure01_Vicinity_Map.mxd



McMILLEN JACOBS ASSOCIATES

NAD 1983 UTM Zone 10N
Source: Esri, USGS, USFWS
National Wetland Inventory 2019
Image: Maxar July 2018

Legend

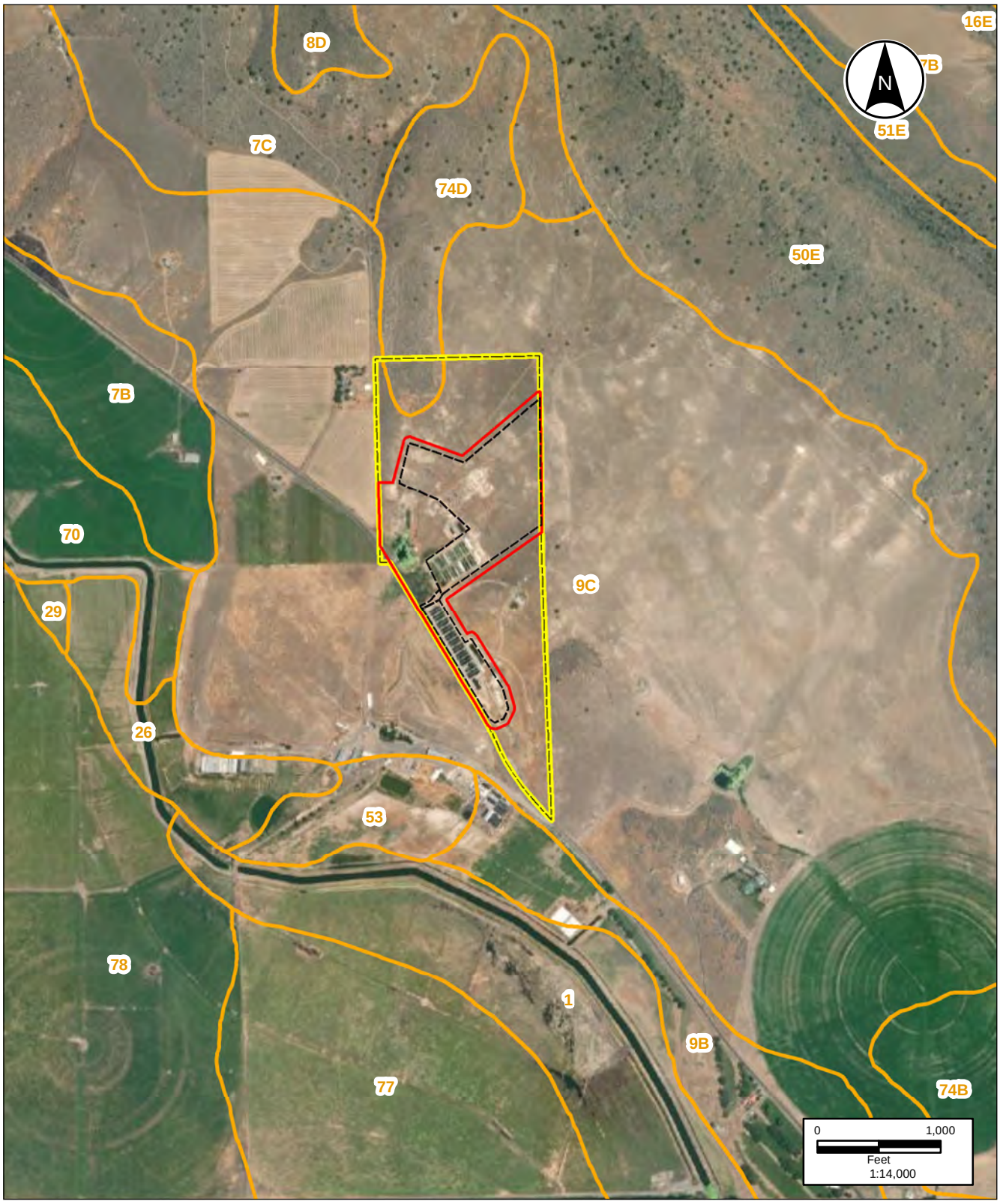
- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine
- USFWS Lease Area
- Survey Area
- Property Boundary

Map 2

National Wetlands Inventory

USFWS Klamath Basin Sucker Assisted Rearing Program
Waters of the US & Wetlands Delineation

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\Wetland_Delineation_Maps\Figure02_NWI_Map.mxd



McMILLEN JACOBS ASSOCIATES

NAD 1983 UTM Zone 10N
Sources: ESRI, USDA/NRCS
Soil Survey October 2017
Image: Maxar July 2018

Legend

Soil Map Units
9C: Capona Loam

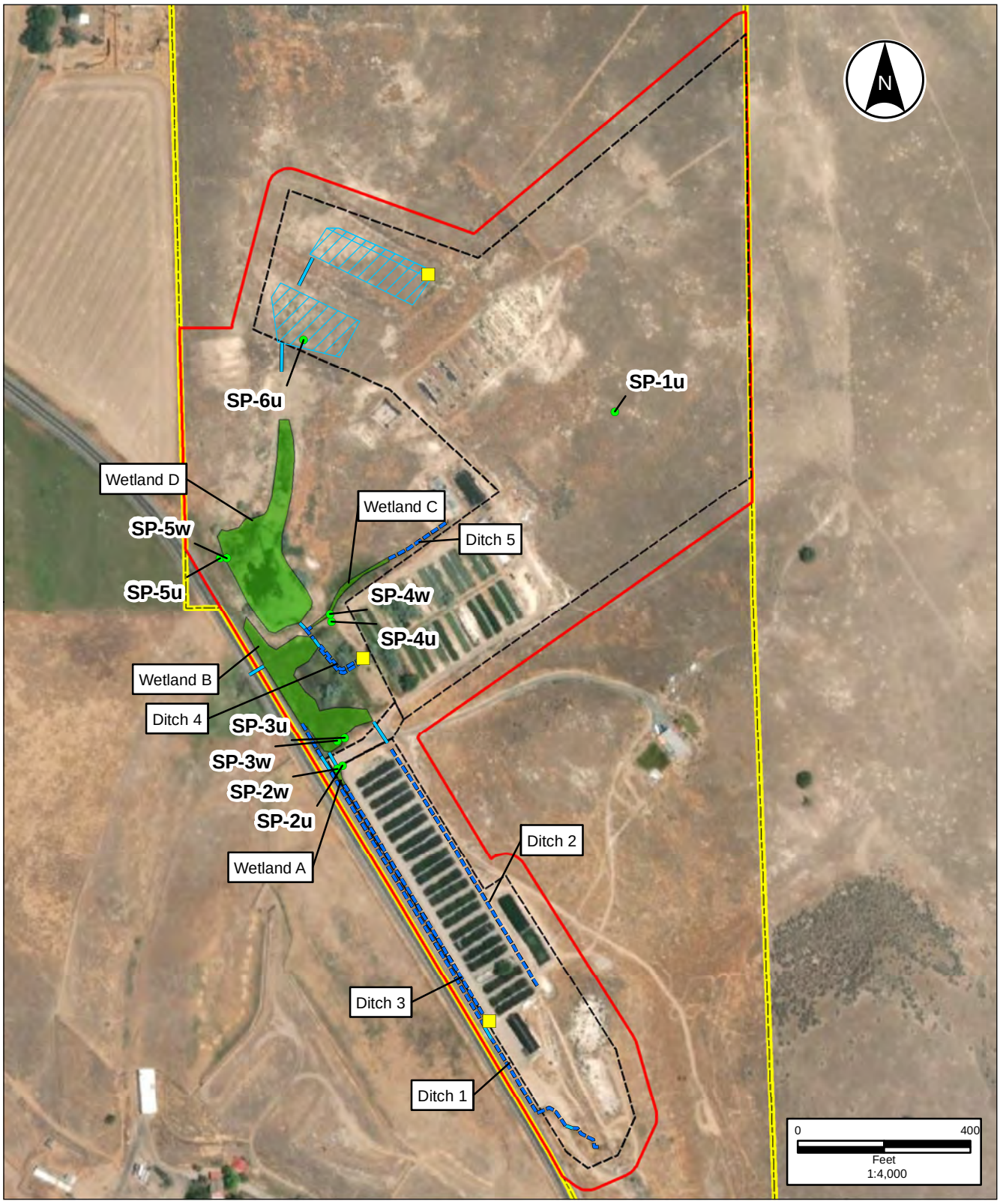
USFWS Lease Area
Survey Area
Property Boundary

Map 3

Soils

USFWS Klamath Basin Sucker Assisted Rearing Program
Waters of the US & Wetlands Delineation

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\Wetland_Delineation_Maps\Figure03_Soils_Map.mxd



McMILLEN JACOBS ASSOCIATES

NAD 1983 UTM Zone 10N
Source: Esri, USGS
Delineation conducted
by McMillen Jacobs Associates
on June 3 and 4, 2020
Image: Maxar July 2018

Legend

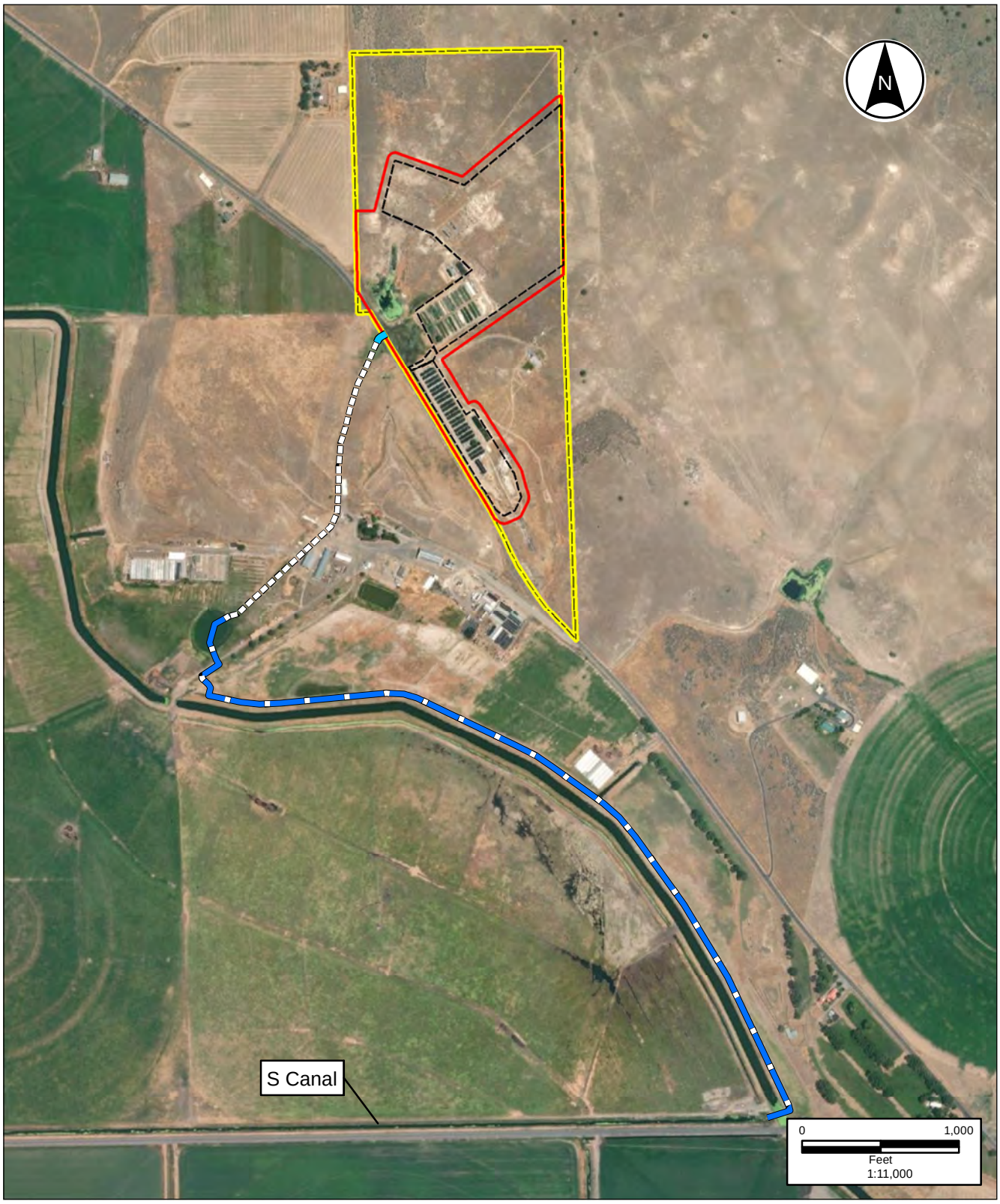
- Pipe Outlet
- Wetland Sample Plot
- Culvert
- Ditch
- Basin
- Wetland
- USFWS Lease Area
- Survey Area
- Property Boundary

Map 4

Delineation

USFWS Klamath Basin Sucker Assisted Rearing Program
Waters of the US & Wetlands Delineation

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\Wetland_Delineation_Maps\Figure04_Wetlands_Delin_Map.mxd



McMILLEN JACOBS ASSOCIATES

NAD 1983 UTM Zone 10N
Source: Esri, USGS
Delineation conducted
by McMillen Jacobs Associates
on June 3 and 4, 2020
Image: Maxar July 2018

Legend

- Off-Site Drainage (Channel)
- Off-Site Drainage (Pipe)
- Off-Site Drainage (Ditch)
- USFWS Lease Area
- Survey Area
- Property Boundary

Map 5

Off-Site Drainage

USFWS Klamath Basin Sucker Assisted Rearing Program
Waters of the US & Wetlands Delineation

Document Path: C:\Users\ljohnson\Box\GIS\Project_Based\Klamath_Sucker_Hatchery\Wetland_Delineation_Maps\Figure05_Site_Drainage_Map.mxd

Appendix B

Photographs

Upland

Photograph 1 – General view of upland, facing west.

Photograph 2 – General view of upland, facing north.

Photograph 3 – SP 1U, facing east.

Photograph 4 – SP 1U.

Wetland A

Photograph 5 – General view of upper Wetland A, facing west.

Photograph 6 – General view of lower Wetland A, facing west.

Photograph 7 – SP 2W, facing south.

Photograph 8 – SP 2W.

Photograph 9 – SP 2U, facing south.

Photograph 10 – SP 2U.

Wetland B

Photograph 11 – General view of Wetland B, facing north.

Photograph 12 – General view of Wetland B, facing north.

Photograph 13 – SP 3W, facing northeast.

Photograph 14 – SP 3W.

Photograph 15 – SP 3U, facing northeast.

Photograph 16 – SP 3U.

Wetland C

Photograph 17 – General view of Wetland C, facing northeast.

Photograph 18 – General view of Wetland C, facing southwest.

Photograph 19 – SP 4W, facing southwest.

Photograph 20 – SP 4W.

Photograph 21 – SP 4U, facing west.

Photograph 22 – SP 4U.

Wetland D

Photograph 23 – General view of Wetland D, facing northeast.

Photograph 24 – General view of northern leg of Wetland D, facing south.

Photograph 25 – SP 5W, facing southeast.

Photograph 26 – SP 5W.

Photograph 27 – SP 5U, facing east.

Photograph 28 – SP 5U.

Ditches

Photograph 29 – General view of southern extent of Ditch 1, facing northwest.

Photograph 30 – General view of northern extent of Ditch 1, facing southeast.

Photograph 31 – General view of Ditch 2, facing southeast.

Photograph 32 – General view of Ditch 3, facing southeast.

Photograph 33 – General view of Ditch 4, facing northwest.

Photograph 34 – General view of Ditch 5, facing southwest.

Basins

Photograph 35 – General view of southern basin, facing west.

Photograph 36 – General view of northern basin, facing southeast.

Photograph 37 – SP 6U, facing southeast.

Photograph 38 – SP 6U.

Off-Site Drainage

Photograph 39 – Lower Klamath Lake Road Culvert Inlet from Wetland B.

Photograph 40 – Lower Klamath Lake Road Culvert Outlet.

Photograph 41 – Off-Site Drainage Pipe Intake.

Photograph 42 – Off-site Drainage Pipe Outlet into Pond.

Appendix C

Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: ***USFWS Klamath Sucker Hatchery*** City/County: ***Klamath Co.*** Sampling Date: ***6/4/2020***

Applicant/Owner: ***USFWS*** State: ***OR*** Sampling Point: ***SP-1U***

Investigator(s): ***Greg Allington (McMillen Jacobs Assoc.)*** Section, Township, Range: ***Sec. 27 T40S R9E***

Landform (hillslope, terrace, etc.): ***Hillslope*** Local relief (concave, convex, none): ***none*** Slope (%): ***2%***

Subregion (LRR): ***LRR D*** Lat: **42.054566 N** Long: **-121.738531 W** Datum: ***WGS84***

Soil Map Unit Name: ***Capona loam*** NWI classification: ***None***

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☐	No	☒				
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampling Area within a Wetland?**	**Yes**	☐	**No** ☒
Wetland Hydrology Present?	Yes	☐	No	☒				

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **10 ft**)			
1. ***Cheatgrass (Bromus tectorum)***	***45***	***Y***	***UPL***
2. ***Tumble Mustard (Sisymbrium altissimum)***	***20***	***Y***	***FACU***
3. ***Clasping Pepperweed (Lepidium perfoliatum)***	***10***	***N***	***UPL***
4. ***Crested Wheatgrass (Agropyron cristatum)***	***5***	***N***	***UPL***
5.			
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**20%**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***0***	(A)
Total Number of Dominant Species Across All Strata:	***2***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***0%***	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	***0***	x1 =	***0***
FACW species	***0***	x2 =	***0***
FAC species	***0***	x3 =	***0***
FACU species	***20***	x4 =	***80***
UPL species	***45***	x5 =	***225***
Column Totals:	***65*** (A)		***305*** (B)

Prevalence Index = B/A = ***4.7***

No	Dominance Test is >50%
No	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: *Ground disturbance within the past 2 years*

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-1U***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	***10YR 3/3***	***100%***					***Sandy silt***	***20% dianomite***
12-18	***10YR 3/3***	***100%***					***Sandy silt***	***50% dianomite***

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: ***Top layer of soil has been removed within the last 2 years***

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: ***USFWS Klamath Sucker Hatchery*** City/County: ***Klamath Co.*** Sampling Date: ***6/4/2020***

Applicant/Owner: ***USFWS*** State: ***OR*** Sampling Point: ***SP-2U***

Investigator(s): ***Greg Allington (McMillen Jacobs Assoc.)*** Section, Township, Range: ***Sec. 34 T40S R9E***

Landform (hillslope, terrace, etc.): ***Hillslope*** Local relief (concave, convex, none): ***none*** Slope (%): ***5%***

Subregion (LRR): ***LRR D*** Lat: **42.05231 N** Long: **-121.740939 W** Datum: ***WGS84***

Soil Map Unit Name: ***Capona loam*** NWI classification: ***None***

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☐	No	☒				
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampling Area within a Wetland?**	**Yes**	☐	**No** ☒
Wetland Hydrology Present?	Yes	☐	No	☒				

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **5 ft**)			
1. ***Cheatgrass (Bromus tectorum)***	***15***	***N***	***UPL***
2. ***Goat Grass (Aegilops triuncialis)***	***10***	***N***	***UPL***
3. ***Clasping Pepperweed (Lepidium perfoliatum)***	***30***	***Y***	***UPL***
4. ***Unknown Grass***	***45***	***Y***	***UPL***
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	0		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***0***	(A)
Total Number of Dominant Species Across All Strata:	***2***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***0%***	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	***0***		x1 =	***0***
FACW species	***0***		x2 =	***0***
FAC species	***0***		x3 =	***0***
FACU species	***0***		x4 =	***0***
UPL species	***75***		x5 =	***375***
Column Totals:	***75***	(A)	***375***	(B)

Prevalence Index = B/A = ***5.0***

No	Dominance Test is >50%
No	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks:

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-2U***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	***10YR 3/4***	***100%***					***Sandy silt***	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: *Road base gravel*

Depth (Inches): *11*

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	***USFWS Klamath Sucker Hatchery***	City/County:	***Klamath Co.***	Sampling Date:	***6/4/2020***
Applicant/Owner:	***USFWS***	State:	***OR***	Sampling Point:	***SP-2W***
Investigator(s):	***Greg Allington (McMillen Jacobs Assoc.)***	Section, Township, Range:	***Sec. 34 T40S R9E***		
WLandform (hillslope, terrace, etc.):	***Ditch***	Local relief (concave, convex, none):	***none***	Slope (%):	***2%***
Subregion (LRR):	***LRR D*** Lat: **42.052319 N**	Long:	**-121.740939 W**	Datum:	***WGS84***
Soil Map Unit Name:	***Capona loam***	NWI classification:	***None***		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **5 ft**)			
1. ***Cattail (Typha latifolia)***	***40***	***N***	***OBL***
2. ***Climbing Nightshade (Solanum dulcamara)***	***40***	***N***	***FAC***
3. ***Canada Thistle (Lepidium flavum)***	***10***	***Y***	***FACU***
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**10**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***2***	(A)
Total Number of Dominant Species Across All Strata:	***2***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***100%***	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	***40***	x1 =	***40***	
FACW species	***0***	x2 =	***0***	
FAC species	***40***	x3 =	***120***	
FACU species	***0***	x4 =	***0***	
UPL species	***0***	x5 =	***0***	
Column Totals:	***80***	(A)	***160***	(B)

Prevalence Index = B/A = ***2.0***

Yes	Dominance Test is >50%
Yes	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-2W***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	***10YR 3/2***	***50%***					***Silty Sand***	
0-18	***10YR 3/1***	***50%***					***Silty Sand***	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	*14*
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	*0*

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks*:* ***Hatchery effluent ditch water***

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	***USFWS Klamath Sucker Hatchery***	City/County:	***Klamath Co.***	Sampling Date:	***6/4/2020***
Applicant/Owner:	***USFWS***	State:	***OR***	Sampling Point:	***SP-3U***
Investigator(s):	***Greg Allington (McMillen Jacobs Assoc.)***	Section, Township, Range:	***Sec. 34 T40S R9E***		
Landform (hillslope, terrace, etc.):	***Hillslope***	Local relief (concave, convex, none):	***none***	Slope (%):	***5%***
Subregion (LRR):	***LRR D***	Lat:	**42.052516 N**	Long:	**-121.740876 W**
Datum:	***WGS84***				
Soil Map Unit Name:	***Capona loam***	NWI classification:	***None***		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☐	No	☒				
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampling Area within a Wetland?**	**Yes**	☐	**No** ☒
Wetland Hydrology Present?	Yes	☐	No	☒				

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **5 ft**)			
1. ***Clasping Pepperweed (Lepidium perfoliatum)***	***25***	***Y***	***UPL***
2. ***Canada Thistle (Cirsium arvense)***	***10***	***N***	***FACU***
3. ***Unknown Grass***	***60***	***Y***	***UPL***
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**5%**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***0***	(A)
Total Number of Dominant Species Across All Strata:	***2***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***0%***	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	***0***	x1 =	***0***
FACW species	***0***	x2 =	***0***
FAC species	***0***	x3 =	***0***
FACU species	***0***	x4 =	***0***
UPL species	***85***	x5 =	***425***
Column Totals:	***85*** (A)		***425*** (B)

Prevalence Index = B/A = ***5.0***

No	Dominance Test is >50%
No	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks:

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-3U***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	***10YR 4/3***	***100%***					***Sandy silt***	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: ***USFWS Klamath Sucker Hatchery*** City/County: ***Klamath Co.*** Sampling Date: ***6/4/2020***

Applicant/Owner: ***USFWS*** State: ***OR*** Sampling Point: ***SP-3W***

Investigator(s): ***Greg Allington (McMillen Jacobs Assoc.)*** Section, Township, Range: ***Sec. 34 T40S R9E***

WLandform (hillslope, terrace, etc.): ***hillslope*** Local relief (concave, convex, none): ***none*** Slope (%): ***1%***

Subregion (LRR): ***LRR D*** Lat: **42.052498 N** Long: **-121.740942 W** Datum: ***WGS84***

Soil Map Unit Name: ***Capona loam*** NWI classification: ***None***

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **5 ft**)			
1. ***Hard-stem bulrush (*Schoenoplectus acutus**)	***70***	***N***	***OBL***
2. ***Cattail (Typha latifolia)***	***10***	***N***	***OBL***
3. ***Stinging Nettle (Urtica dioica)***	***10***	***Y***	***FAC***
4. ***Climbing Nightshade (Solanum dulcamara)***	***10***		***FAC***
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**0**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***1***	(A)
Total Number of Dominant Species Across All Strata:	***1***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***100%***	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	***70***	x1 =	***70***
FACW species	***0***	x2 =	***0***
FAC species	***0***	x3 =	***0***
FACU species	***0***	x4 =	***0***
UPL species	***0***	x5 =	***0***
Column Totals:	***70*** (A)		***70*** (B)

Prevalence Index = B/A = ***1.0***

Yes	Dominance Test is >50%
Yes	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: *Hard-stem bulrush is dead*

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-3W***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	***10YR 3/1***	***100%***					***Silt***	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	*14*
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	*11*

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks*:*

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	***USFWS Klamath Sucker Hatchery***	City/County:	***Klamath Co.***	Sampling Date:	***6/4/2020***
Applicant/Owner:	***USFWS***	State:	***OR***	Sampling Point:	***SP-4U***
Investigator(s):	***Greg Allington (McMillen Jacobs Assoc.)***	Section, Township, Range:	***Sec. 34 T40S R9E***		
Landform (hillslope, terrace, etc.):	***Hillslope***	Local relief (concave, convex, none):	***none***	Slope (%):	***3%***
Subregion (LRR):	***LRR D***	Lat:	**42.053255 N**	Long:	**-121.740976 W**
Datum:	***WGS84***				
Soil Map Unit Name:	***Capona loam***	NWI classification:	***None***		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☐	No	☒				
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampling Area within a Wetland?**	**Yes**	☐	**No** ☒
Wetland Hydrology Present?	Yes	☐	No	☒				

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **10 ft**)			
1. ***Cheatgrass (Bromus tectorum)***	***20***	***Y***	***UPL***
2. ***Clasping Pepperweed (Lepidium perfoliatum)***	***5***	***N***	***UPL***
3. ***Unknown Grass***	***45***	***Y***	***UPL***
4. ***Canada Thistle (Cirsium arvense)***	***5***	***N***	***FACU***
5. ***Whitetop (Lepidium draba)***	***5***	***N***	***UPL***
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**20**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***0***	(A)
Total Number of Dominant Species Across All Strata:	***2***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***0%***	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	***0***	x1 =	***0***	
FACW species	***0***	x2 =	***0***	
FAC species	***0***	x3 =	***0***	
FACU species	***0***	x4 =	***0***	
UPL species	***75***	x5 =	***375***	
Column Totals:	***75*** (A)		***375*** (B)	

Prevalence Index = B/A = ***5.0***

No	Dominance Test is >50%
No	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks:

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-4U***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	***10YR 3/4***	***100%***					***Sandy silt***	***20% dianomite***
7-18	***10YR 2/2***	***100%***					***Silt***	***0% dianomite***

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: ***USFWS Klamath Sucker Hatchery*** City/County: ***Klamath Co.*** Sampling Date: ***6/4/2020***

Applicant/Owner: ***USFWS*** State: ***OR*** Sampling Point: ***SP-4W***

Investigator(s): ***Greg Allington (McMillen Jacobs Assoc.)*** Section, Township, Range: ***Sec. 34 T40S R9E***

WLandform (hillslope, terrace, etc.): ***hillslope*** Local relief (concave, convex, none): ***none*** Slope (%): ***3%***

Subregion (LRR): ***LRR D*** Lat: **42.053304 N** Long: **-121.740987 W** Datum: ***WGS84***

Soil Map Unit Name: ***Capona loam*** NWI classification: ***None***

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **5 ft**)			
1. ***Cattail (Typha latifolia)***	***85***	***N***	***OBL***
2. ***Unknown***	***15***	***N***	***OBL***
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**0**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***1***	(A)
Total Number of Dominant Species Across All Strata:	***1***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***100%***	(A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:
OBL species	***85***	x1 =	***85***
FACW species	***0***	x2 =	***0***
FAC species	***0***	x3 =	***0***
FACU species	***0***	x4 =	***0***
UPL species	***0***	x5 =	***0***
Column Totals:	***85*** (A)		***85*** (B)

Prevalence Index = B/A = ***1.0***

Yes	Dominance Test is >50%
Yes	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-4W***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	***10YR 3/1***	***100%***					***Sandy Silt***	***Top 2" algae debris***

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☒ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: *Roots*

Depth (Inches): *12*

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☒	No	☐	Depth (inches):	*0*
Water Table Present?	Yes	☒	No	☐	Depth (inches):	*0*
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	*0*

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site:	***USFWS Klamath Sucker Hatchery***	City/County:	***Klamath Co.***	Sampling Date:	***6/4/2020***
Applicant/Owner:	***USFWS***	State:	***OR***	Sampling Point:	***SP-5U***
Investigator(s):	***Greg Allington (McMillen Jacobs Assoc.)***	Section, Township, Range:	***Sec. 27 T40S R9E***		
Landform (hillslope, terrace, etc.):	***Flat***	Local relief (concave, convex, none):	***none***	Slope (%):	***0%***
Subregion (LRR):	***LRR D***	Lat:	**42.053668 N**	Long:	**-121.741916 W**
Datum:	***WGS84***				
Soil Map Unit Name:	***Capona loam***	NWI classification:	***None***		

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes** ☐	**No** ☒
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **5 ft**)			
1. ***Clasping Pepperweed (Lepidium perfoliatum)***	***30***	***Y***	***UPL***
2. ***Cheatgrass (Bromus tectorum)***	***20***	***Y***	***UPL***
3. ***Crested Wheatgrass (Agropyron cristatum)***	***15***	***N***	***UPL***
4. ***Tumble Mustard (Sisymbrium altissimum)***	***10***	***N***	***FACU***
5. ***Unknown Grass***	***25***	***Y***	***UPL***
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**0%**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***0***	(A)
Total Number of Dominant Species Across All Strata:	***3***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***0%***	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	***0***	x1 =	***0***
FACW species	***0***	x2 =	***0***
FAC species	***0***	x3 =	***0***
FACU species	***0***	x4 =	***0***
UPL species	***75***	x5 =	***375***
Column Totals:	***75*** (A)		***375*** (B)

Prevalence Index = B/A = ***5.0***

No	Dominance Test is >50%
No	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks:

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-5U***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	***10YR 3/3***	***100%***					***Sandy silt***	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: ***USFWS Klamath Sucker Hatchery*** City/County: ***Klamath Co.*** Sampling Date: ***6/4/2020***

Applicant/Owner: ***USFWS*** State: ***OR*** Sampling Point: ***SP-5W***

Investigator(s): ***Greg Allington (McMillen Jacobs Assoc.)*** Section, Township, Range: ***Sec. 27 T40S R9E***

WLandform (hillslope, terrace, etc.): ***slope*** Local relief (concave, convex, none): ***none*** Slope (%): ***10%***

Subregion (LRR): ***LRR D*** Lat: **42.053668 N** Long: **-121.741857 W** Datum: ***WGS84***

Soil Map Unit Name: ***Capona loam*** NWI classification: ***None***

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampling Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **5 ft**)			
1. ***Cattail (Typha latifolia)***	***50***	***N***	***OBL***
2. ***Curly Dock (Rumex crispus)***	***20***	***N***	***FAC***
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**0**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***2***	(A)
Total Number of Dominant Species Across All Strata:	***2***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***100%***	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	***70***		x1 =	***70***
FACW species	***0***		x2 =	***0***
FAC species	***0***		x3 =	***0***
FACU species	***0***		x4 =	***0***
UPL species	***0***		x5 =	***0***
Column Totals:	***70***	(A)		***70*** (B)

Prevalence Index = B/A = ***1.0***

Yes	Dominance Test is >50%
Yes	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: *50% open water*

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-5W***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	***10YR 2/1***	***100%***					***Muck***	
2-18	***10YR 3/1***	***100%***					***Silt***	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☒ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☒	No	☐	Depth (inches):	*0*
Water Table Present?	Yes	☒	No	☐	Depth (inches):	*0*
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	*0*

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks*:*

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: ***USFWS Klamath Sucker Hatchery*** City/County: ***Klamath Co.*** Sampling Date: ***6/4/2020***

Applicant/Owner: ***USFWS*** State: ***OR*** Sampling Point: ***SP-6U***

Investigator(s): ***Greg Allington (McMillen Jacobs Assoc.)*** Section, Township, Range: ***Sec. 27 T40S R9E***

Landform (hillslope, terrace, etc.): ***Flat*** Local relief (concave, convex, none): ***concave*** Slope (%): ***0%***

Subregion (LRR): ***LRR D*** Lat: **42.055047 N** Long: **-121.741178 W** Datum: ***WGS84***

Soil Map Unit Name: ***Capona loam*** NWI classification: ***None***

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒			
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampling Area within a Wetland?**	**Yes** ☐	**No** ☒
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks: ***NWI indicates the debris basin is a palustrine wetland. Sample plot is located within the debris basin at the lowest elevation.***

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **10 ft**)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **10 ft**)			
1. ***Gray Rabbitbrush (Chrysothamnus nauseosus)***	***0***		
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot Size: **10 ft**)			
1. ***Pigweed (Amaranthus retroflexus)***	***5***	***Y***	***FACU***
2. ***Unknown Grass***	***5***	***Y***	***UPL***
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10%	= Total Cover	
Woody Vine Stratum (Plot Size: **10 ft**)			
1.			
2.			
	0%	= Total Cover	
% Bare Ground in Herb Stratum	**90%**		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	***0***	(A)
Total Number of Dominant Species Across All Strata:	***0***	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	***0%***	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	***0***	x1 =	***0***
FACW species	***0***	x2 =	***0***
FAC species	***0***	x3 =	***0***
FACU species	***0***	x4 =	***0***
UPL species	***0***	x5 =	***0***
Column Totals:	***0*** (A)		***0*** (B)

Prevalence Index = B/A =

No	Dominance Test is >50%
N/A	Prevalence Index is ≤3.0[1]
No	Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
No	Wetland Non-Vascular Plants[1]
No	Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: *Gray Rabbitbrush (Chrysothamnus nauseosus) was observed to be dead in the sample plot.*

Project Site: ***USFWS Klamath Sucker Hatchery***

SOIL

Sampling Point: ***SP-6U***

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	***10YR 4/3***	***100%***					***Sandy silt***	
12-18	***10YR 3/2***	***100%***					***Silt***	***Diatomite 30%***

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thick Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ***Ponded water from pond effluent / Dry***

Appendix D

Waters of the U.S. and Wetlands Delineation Methodology

Waters of the U.S. Delineation Methodology

The OHWM is defined by the USACE (2008a) as:

"Federal jurisdiction over a non-wetland WoUS extends to the OHWM, defined in 33 CFR Part 328.3 as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, or the presence of litter and debris. In the Arid West region of the United States, waters are variable and include ephemeral/intermittent and perennial channel forms."

Physical characteristics that are present on the shoreline of a watercourse may vary depending on the type of water body and conditions of the area. There are no required physical indicators that must be present to make an OHWM determination. However, the following physical characteristics were considered when making the determination:

- Natural line impressed on the bank;
- Shelving or topographic breaks,
- Changes in the character of soil,
- Destruction of terrestrial vegetation,
- Presence of litter or debris (drift lines),
- Wracking,
- Vegetation matted down, bent, or absent,
- Sediment sorting,
- Leaf litter disturbed or washed away,
- Scour,
- Deposition,
- Multiple observed flow events,
- Bed and banks,
- Water staining, and
- Change in plant community.

Other methods for determining the OHWM that do not include physical observation:

- Lake and stream gage data,
- Elevation data,
- Spillway height,
- Flood predictions,
- Historic records of water flow, and
- Statistical evidence.

Combinations of physical characteristics and other methods should be used when available for determining the OHWM. Because many types of water bodies occur with varying conditions including topography, channel morphology and flow dynamics, other physical characteristics indicative of the OHWM may also be used that are not identified in the USACE guidance.

Wetland Delineation Methodology

The 1987 USACE Wetland Delineation Manual and 2008 USACE Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (USACE 2008b) follow the three-parameter approach for making wetland determinations, such that positive indicators of wetlands must be present for each of the following parameters: 1) vegetation, 2) soils, and 3) hydrology. Each of these three parameters is described in detail below. Note that the references in the text below are included in Section 5.0 of the wetland and waters of the U.S. delineation report.

Vegetation

The 2008 USACE manual defines hydrophytic vegetation as the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence on the plant species present. Hydrophytic plant species have the ability to grow, compete and sustain in areas where anaerobic (oxygen deprived) conditions exist from the presence of surface or groundwater. In 1988, the USACE and USFWS (Reed 1988) developed plant indicator categories that describe the probability of vegetation to occur in wetlands. This list was updated in 1993 (Reed *et al.1993*) and in 2012 (Lichvar 2012), and each plant observed within the Survey Area was categorized according to the Arid West Region indicator status. Table D-1 below defines the indicator status categories.

Table D-1. Plant Indicator Status Categories

Indicator Category	Indicator Symbol	Description
Obligate Wetland Plants	OBL	Plants that occur in wetlands, under natural conditions, greater than 99 percent of the time.
Facultative Wetland Plants	FACW	Plants that occur in wetlands, under natural conditions, between 67 to 99 percent of the time.
Facultative Plants	FAC	Plants that occur in wetlands, under natural conditions, between 34 to 66 percent of the time.
Facultative Upland Plants	FACU	Plants that occur in wetlands, under natural conditions, between 1 to 33 percent of the time.
Obligate Upland Plants	UPL	Plants that occur in wetlands, under natural conditions, less than 1 percent of the time.
No Indicator	NI	Indicator status has not been identified for the species.
No Occurrence	NO	No known occurrence of the plant in the region.

The prevalence of wetland vegetation is characterized by the dominant species comprising the plant community or communities. A dominant species is considered any plant species that is represented by 20 percent or greater total aerial coverage for each vegetative stratum (tree, shrub, herbaceous or aquatic bed). If more than 50 percent of the dominant plant species in a wetland are categorized as OBL, FACW, or FAC, then the plant community for the wetland can be classified as hydrophytic. Other indicators of hydrophytic vegetation include visual observations of plant species growing in areas of prolonged inundation and/or soil saturation, morphological adaptations, physiological adaptations and reproductive adaptations.

Wetland vegetation communities within the Survey Area were classified according to the Cowardin classification system (Cowardin *et al.* 1979). Vegetation nomenclature described in this report follows the format outlined in the book titled *Intermountain Flora* (Cronquist *et al.*1972).

Soils

Hydric soils are soils that formed under conditions of saturation, flooding or ponding for a long enough period of time during the growing season that anaerobic conditions develop in the upper portion of the soil profile (USACE 2008b). These anaerobic conditions exhibit certain characteristics that can be identified in the field and that are associated with a wetland complex. Prolonged anaerobic soil conditions eventually lead to a chemically reduced state where soil components (iron, manganese, sulfur and carbon compounds) develop soil colors and other physical characteristics that are indicative of hydric soils. These chemically-reduced soil components persist when the soil is either wet or dry. Specific hydric soil characteristics include:

- Reduced iron resulting in a soil color that is known as gley (bluish-gray or greenish-gray);
- Loss of iron resulting in a soil color that is known as redox depletion (gray or reddish-gray);
- Loss of iron resulting in concentrated soil patches known as redoximorphic concentrations (orange or red);
- Sulfidic odor; and/or
- High organic matter content (peat or muck) in the upper 32 inches of the soil profile.

Soil colors were determined using the Munsell® Soil-Color Charts (Munsell Color 2009) and their corresponding *hue* (spectral colors, e.g. 10YR), *value* (degree of lightness, e.g. 2/) and *chroma* (strength or purity of color, /1) were recorded. Soil profiles must either have a dominant chroma of 2 or less, or the layer with a dominant chroma of more than 2 must be less than 6 inches thick to meet any hydric soil indicators. Hydric soil indicators commonly found in wetlands are identified in the technical document *Field Indicators of Hydric Soils in the United States* (NRCS 2010). These indicators help identify soils that were formed under saturated, flooded or ponded conditions long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile.

Documented soil pits were dug throughout the wetland area as well as in the surrounding upland area to a depth of approximately 18 inches, or until refusal. The soil was analyzed visually and physically to determine its soil type. Hydric soil conditions must be met within 12 inches of the ground surface in order for a soil to be considered hydric.

Hydrology

Hydrologic patterns in a wetland can be influenced by precipitation, stratigraphy, topography, soil permeability, plant cover and human disturbance. Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Wetland hydrology is sometimes difficult to determine during the summer months when precipitation has stopped, groundwater tables have dropped, stream flows have receded and springs or seeps have dried. Hydrologic indicators can be used during the wet spring months as well as the dry summer and fall months to identify primary and/or secondary indicators within the soil profile. Primary indicators include the following (USACE 2008b):

- Surface water or inundation,
- High water table or saturated soil within 12 inches of the ground surface for 14 or more consecutive days at a minimum frequency of 5 years out of 10,
- Water marks,
- Sediment and drift deposits,
- Algal mat or crust,
- Iron deposits,
- Surface soil cracks,
- Salt crust,
- Inundation visible on aerial photography,
- Sparsely vegetated concave surface,
- Aquatic invertebrates,
- Water-stained leaves,
- Hydrogen sulfide odor,
- Oxidized rhizospheres along living roots,
- Presence of reduced iron, and
- Stunted or stressed plants.

Secondary indicators include (USACE 2008b):

- Drainage patterns,
- Dry-season water table,
- Saturation visible on aerial photography,
- Geomorphic position,
- Shallow aquitard,
- FAC-neutral test,
- Raised ant mounds, and
- Frost-heave hummocks.

The growing season for a region is dependent upon climate, precipitation and topography. The beginning and ending dates of the growing season are examined for an area to determine if wetland hydrology was present for the required time period. Wetland hydrology must be present for at least 14 consecutive days within 12 inches of the ground surface during the growing season in order for an area to be considered a wetland. Two indicators that the growing season has begun include 1) a soil temperature that is at least 41 degrees Fahrenheit (°F), measured at least 12 inches below the ground surface, and/or 2) aboveground growth and development of vascular plants (USACE 2008b).

The growing season has begun on a site when two or more types of non-evergreen vascular plants exhibit one or more of the following indicators of biological activity:

- Emergence of herbaceous plants,
- New growth on vegetative crowns,
- Coleoptiles/cotyledon emergence from seed,
- Bud burst on woody plants,
- Emergence or elongation of woody plant leaves, and/or
- Emergence or opening of flowers.

The growing season has ended when woody deciduous species lose their leaves and/or the last herbaceous plants cease flowering and their leaves become dry or brown. Additional information may be collected from the WETS tables available from the USDA NRCS National Water and Climate Center. These tables summarize the air temperature from National Weather Service meteorological stations throughout the United States for a specific area. The growing season dates in the WETS tables are an estimate of when air temperatures average above 28°F.