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RECLAMATION

# **Leavenworth National Fish Hatchery Surface Water Intake Fish Screens and Fish Passage Project Environmental Impact Statement**

## **Cultural Resources Report**



**U.S. Department of the Interior  
Bureau of Reclamation  
Columbia-Pacific Northwest Regional Office  
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## **Mission Statements**

The Department of the Interior conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

# Executive Summary

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) has prepared an Environmental Impact Statement (EIS) for the Leavenworth National Fish Hatchery (hereafter, LNFH or Hatchery) Surface Water Intake Fish Screens and Fish Passage (SWISP) Project (**Map A-1** in **Appendix A**). The purpose of this specialist report is to provide a comprehensive environmental baseline and analysis of the potential impacts of the SWISP Project under four separate alternatives, including Alternative A, No Action.

The Cultural Resources Analysis Area for this Project is within Icicle Creek Valley, approximately 1.3 miles south of the mouth of the creek and encompasses portions of the Leavenworth National Fish Hatchery (hereafter, LNFH or Hatchery) complex. The Analysis Area, or area of potential effects (APE) overlaps in places with the boundaries of the LNFH Historic District, a group of resources associated with the LNFH that have federally recognized historical significance and are listed in the National Register of Historic Places (NRHP).

Indicators for the cultural resources analysis include the number of historic properties or other cultural resources the proposed Project's activities would affect. Historic properties are defined in the NHPA, but they may be a subset of cultural resources as defined under the National Environmental Policy Act (NEPA). The degree of impacts on historic properties is measured by whether the impacts cause the loss or degradation of the characteristics of the resource that lend its significance (and therefore make it eligible for listing in the NRHP).

No documented archaeological resources eligible for listing in the NRHP or documented Native American Traditional Cultural Properties (TCPs) are located within the proposed APE.

The four alternatives analyzed would not lead to any adverse effects on historic properties, including the LNFH Historic District. The proposed actions within the LNFH Historic District are either underground (pipeline re-lining or replacement) or construction staging areas—no alterations are proposed for contributing resources to the historic district. In terms of archaeological resources, professional archaeological monitoring would be implemented in accordance with an inadvertent discovery plan for project ground-disturbing activities that would be related to the action alternatives. This recommendation follows a stipulation for archaeological monitoring and an inadvertent discovery plan provided by the Washington State Department of Archaeology and Historic Preservation (DAHP) in their concurrence with a determination that the project would have no adverse effects on historic properties.

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# Acronyms and Abbreviations

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Full Phrase

AD	anno Domini
APE	area of potential effects
BMP	Best Management Practice
BP	before the present
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIPP	cure-in-place pipe
COIC	Cascade Orchard Irrigation Company
CUA	contractor use area
DAHP	Washington State Department of Archaeology and Historic Preservation
Ecology	Washington Department of Ecology
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
Forest Service	U.S. Department of Agriculture, Forest Service
IO&MA	Intake Operations and Maintenance Area
LNFH	Leavenworth National Fish Hatchery
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
O&M	operations and maintenance
PISMA	pipeline intake and sediment management area
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RCW	Revised Code of Washington
ROW	right-of-way
SWISP	Surface Water Intake Fish Screens and Fish Passage
TCP	traditional cultural property

U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WISAARD	Washington Information System for Architectural and Archaeological Records Data

# Chapter 1. General Project Information

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) has prepared an Environmental Impact Statement (EIS) for the Leavenworth National Fish Hatchery (hereafter, LNFH or Hatchery) Surface Water Intake Fish Screens and Fish Passage (SWISP) Project (**Map A-1** in **Appendix A**). The purpose of this specialist report is to provide a comprehensive environmental baseline and analysis of the potential impacts of the SWISP Project under four separate alternatives, including Alternative A, No Action.

## 1.1 Project Area

The Project Area is on and near the LNFH, near the City of Leavenworth in Chelan County, Washington. The Project Area includes the LNFH's surface water intake and primary point of diversion on Icicle Creek, and conveyance pipeline to the Hatchery. The surface water intake is on U.S. Fish and Wildlife Service (USFWS) property, while the conveyance pipeline crosses several private parcels before re-entering USFWS property. Access to private parcels is via existing easement agreements between the landowner and federal government. The Project Area also includes approximately 1.25 miles of Icicle Creek Road, from the surface water intake to a U.S. Department of Agriculture, Forest Service (Forest Service) kiosk to the west, as well as access roads and staging areas on the USFWS property. The Project Area is depicted on **Map A-1** in **Appendix A**.

## 1.2 Alternatives

Reclamation identified a reasonable range of alternatives for analysis in the EIS through the development of screening criteria, the assessment of Project *components* and *elements* against these criteria, and the consideration of scoping comments received. The major Project components are Intake, Fish Passage, Sediment Management, Conveyance Pipeline, Temporary Hatchery Water Supply, and Access and Staging. Each *component* has technical and operational requirements; generally, there are different techniques to meet these requirements. These different techniques are termed *elements*.

**Chapter 2** of the EIS describes the No Action Alternative and three action alternatives, along with a summary comparison of the differences and common impacts between the alternatives. A summary of the alternatives and component elements considered but eliminated from detailed study is also provided. **Map A-2** through **Map A-8** in **Appendix A** depict the alternatives in detail.

### 1.2.1 Alternative A – No Action

The No Action Alternative represents continuation of current operation and maintenance (O&M) of the LNFH surface water intake and delivery system on Icicle Creek and provides a basis for comparison to the action alternatives. The existing intake and delivery system, constructed in 1939 and 1940, would remain in its current degraded condition and likely continue to deteriorate. All existing features listed and summarized below and depicted in **Map A-2** and **Map A-3** in **Appendix**

A, would remain in place and would not be modified, improved, or rehabilitated under this alternative.

- Low-head diversion dam
- Intake channel
- Intake trashrack structure
- Access road
- Fish ladder/Sediment sluice
- Gatehouse
- Outlet channel
- Conveyance pipeline
- Sand settling basin
- Inside and outside screen chambers

The diversion dam would continue to divert water from Icicle Creek to the intake channel, through an unscreened diversion. The start of the intake system would remain at the intake trashrack structure. The excavated intake channel above the intake trashrack structure and concrete intake channel below would continue to convey water through gravity flow to the gatehouse. The channel would remain unscreened. The intake trashrack structure at the entrance to the concrete intake channel would remain in operation. The trashrack's 6-inch bar spacing would continue to prevent large debris from entering the concrete intake channel. The road would not be modified or extended and would continue to provide access to the stairs leading to the intake trashrack structure. The existing fish ladder would not be modified to alter flow or enhance fish passage.

The existing gatehouse serves to transition surface water from the open intake channel to the enclosed conveyance pipeline. It houses a fine rack with 1.5-inch bar spacing and an overflow spill and sediment sluicing sections separated by a bulkhead. The fine rack limits the size of objects that enter the pipeline. A gate valve can be opened to flush sediment; however, it does not function reliably. The gatehouse would remain in place, and the outlet channel would continue to direct bypassed water and sluice material (sediment) from the gatehouse back to Icicle Creek.

The aging 31- to 33-inch diameter buried concrete pipeline would continue to convey water up to 42 cubic feet per second (cfs) from the gatehouse to the Hatchery. No sections would be lined or replaced and introduced sediment would continue to be transported to the Hatchery. Transported sediments would continue to degrade the existing pipeline. Before water enters the Hatchery's rearing units it is either routed into the sand settling basin (normal operation) or directly to the inside or outside screen chamber. The sand settling basin would continue to trap sediment and minimize the amount of remaining sediment from entering fish production facilities. Sediment and entrained fish would continue to be periodically removed from the sand settling basin in accordance with existing biological opinions (USFWS 2011; NMFS 2017). From the sand settling basin, water can be directed to either the inside or outside screen chamber before entering the Hatchery's rearing units. The screens in the inside and outside screen chambers are composed of vertical static screen panels that filter fish and debris from the Hatchery's water supply. The screen chambers do not

meet National Marine Fisheries Service (NMFS) current screening criteria (NMFS 2011)<sup>1</sup>. Screens must be manually cleaned, and entrained fish must be captured, removed, counted, and returned to Icicle Creek. LNFH reports the number and species of Endangered Species Act (ESA)-listed fish entrained in the intake and delivery system in their annual take report to NMFS and the USFWS.

Hatchery O&M is subject to both the National Pollution Discharge Elimination System (NPDES) permit from U.S. Environmental Protection Agency (EPA) and O&M consultations under the ESA Section 7 with NMFS and USFWS (USFWS 2011; NMFS 2017). Extraordinary maintenance would continue to be handled on a case-by-case basis as determined to be necessary by the Hatchery. ESA Section 7 consultation has been reinitiated with the USFWS for O&M of the Hatchery.

The Cascade Orchard Irrigation Company (COIC) is expected to relocate its point of diversion on Icicle Creek downstream of the Hatchery. Once the new point of diversion is constructed, COIC would no longer divert water at the current intake location.

### **1.2.2 Alternative B – Proposed Action**

Reclamation proposes to rehabilitate the LNFH surface water intake and delivery system on Icicle Creek by constructing new headworks<sup>2</sup> and a creek-width roughened channel and replacing and lining the surface water conveyance pipeline to the Hatchery. In addition, the current access road would be modified and extended to provide better entry to an expanded Intake Operations and Maintenance Area (IO&MA). A conceptual drawing of the proposed intake facilities is included as **Map A-4 in Appendix A**. See **Map A-5 and Map A-6 in Appendix A** showing activities proposed under Alternative B.

#### ***Intake and Fish Passage***

Construction of the headworks and roughened channel would incorporate the existing low-head diversion dam and intake channel. The roughened channel would incorporate a portion of the fish ladder/sediment sluice; the unincorporated portion would be removed. Two self-cleaning, cylindrical, screens would be installed at the diversion headworks to comply with NMFS fish screening criteria, provide redundancy in case of screen maintenance, and to facilitate the Hatchery's ability to meet future water conservation goals. A low-flow boulder weir fishway would be integrated into the roughened channel to provide NMFS-compliant fish passage during typical low flows, and a portion of the roughened channel would be extended upstream of the diversion dam to facilitate fish passage overall and at higher flows in particular. The intake trashrack structure would be removed, and a new pipeline would be placed in the intake channel to connect the headworks to the conveyance pipeline. The intake channel would be filled to cover the pipeline and create the IO&MA to enable Hatchery personnel to safely and efficiently access, operate, and maintain the intake facilities. The existing stairway from the access road to the intake channel would be removed

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<sup>1</sup> The existing inside and outside screen chambers meet NMFS standards for fish screening (NMFS 1997), but not current criteria (NMFS 2011). Even if the screen chambers were upgraded to NMFS current criteria, take would still occur. This is because take occurs at the point of entrainment, at the existing intake facilities on Icicle Creek. The screen chambers are at the distal end of the conveyance pipeline, approximately 6,300 feet from the existing intake facilities on Icicle Creek.

<sup>2</sup> Headworks means any dam, weir, barrage, or reservoir and all works appurtenant thereto, used for or in connection with the storage, control, conveyance, or distribution of water. For the SWISP Project, the headworks includes the combined intake structure elements, such as the intake structure, gates, and retaining walls.

as this area would become part of the IO&MA. See **Map A-4** in **Appendix A** for a conceptual drawing of the proposed intake facilities.

### ***Sediment Management***

Elements to manage sediment accumulated at the intake include a ramp on the upstream side of the roughened channel to help mobilize sediment over the feature, a vertical access pipe incorporated into the IO&MA behind the screens to enable a submersible pump to draw in screened water and force it through a hose and nozzle to mobilize sediment through propulsion, and a series of pipes, valves, and outlet channel at the pipeline intake and sediment management area (PISMA) to flush sediment through the intake pipeline back to Icicle Creek (as needed). Components of the PISMA would be placed at the former gatehouse location. See **Map A-4** in **Appendix A** for a conceptual drawing of the proposed intake facilities.

### ***Conveyance Pipeline***

Under Alternative B, approximately 2,180 feet of the conveyance pipeline would be replaced using cut and cover trenching on USFWS property and approximately 4,000 feet of conveyance pipeline would be lined with cure-in-place pipe (CIPP) on private parcels (**Map A-5** in **Appendix A**). Construction of several temporary access points (contractor use areas [CUAs]) along the existing conveyance pipeline alignment would be installed to provide ingress and egress for pipe lining on private lands. These areas would be restored to pre-construction conditions following lining activities.

The uppermost segment of the existing concrete cylinder pipeline on USFWS property would be removed and replaced with 520 feet of new 42-inch high-density polyethylene pipe in the same location. The 1,660 feet of the lower segment of pipeline on USFWS property would be constructed parallel to the existing concrete cylinder pipeline. The current control valve system at the sand settling basin on USFWS property would be replaced with a new control valve vault to allow safe pipe filling operations. After control valve connections are made, this segment of the existing pipeline would be decommissioned and abandoned-in-place. All rehabilitation, replacement, and modernization of the LNFH intake and delivery facilities would conclude at the control valve system; the sand settling basin and inside and outside screen chambers would remain unaltered.

### ***Temporary Hatchery Water Supply***

Temporary Hatchery water would primarily be supplied by a gravity-fed diversion. A 40 cfs water supply to LNFH would be maintained during Phase I construction<sup>3</sup>. Temporary pumping from the spillway pool would supply water while the gravity-fed bypass pipeline and outlet are installed and connected to the existing conveyance pipeline approximately 200-300 feet below the intake construction area. This would occur over an approximately 1-week period. It is likely that multiple pumps would be needed to supply this water.

A 20 cfs water supply to LNFH would be maintained during Phase II construction between April 17 to May 20. This would be needed when pipeline replacement, lining with CIPP, and pipeline

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<sup>3</sup> During Phase I construction, the LNFH has agreed to a 40 cfs temporary Hatchery water supply, which is different than the LNFH's full surface water right of 42 cfs.



interconnections were underway, and would occur through pumping from the spillway pool adjacent to LNFH (**Map A-5** in **Appendix A**).

### **Access and Staging**

Staging and storage sites for construction equipment and materials, and construction staff administration and vehicle parking would be located at various places on LNFH grounds (see **Map A-5** and **Map A-6** in **Appendix A**). Trucks hauling construction equipment and containing construction materials would be required to turn around approximately 1.25 miles southwest of the intake access road, at the Forest Service and Alpine Lakes Wilderness Area kiosk on Icicle Creek Road. Construction access to the conveyance pipeline would use existing roads, temporary access routes, and the pipeline right-of-way (ROW).

### **Construction**

Construction of the SWISP Project would occur in three phases. Phase I would include construction of the intake access road and rehabilitation of the intake structures and facilities (e.g., fish screens, fish passage). Phase II would include replacement and lining of the conveyance pipeline. There would likely be temporal overlap between parts of Phase I and Phase II construction. For instance, in July 2022, it is likely that construction of the proposed intake facilities may overlap with pipeline replacement on the Hatchery grounds (see **Appendix C** in the SWISP Project EIS for additional assumptions). Phase III would include revegetation of upland and riparian areas that are proposed to be disturbed.

Phase I construction activities would occur up to 24 hours per day, 6 days per week, and up to 7 days per week. In addition, the in-water work window would be from July 1 to November 15 each year. Phase II construction activities and Phase III revegetation activities would not include any in-water work and would be limited to workday hours of 7:00 a.m. to 10:00 p.m., 5 days per week, and up to 6 days per week.

Phase I includes:

- Construction activities occurring up to 24 hours a day, up to 7 days a week.
- Construction occurring over two seasons primarily within the in-water work window of July 1 to November 15.
- Construction of intake access road (2022).
- Installation of temporary cofferdams<sup>4</sup> (2022 and 2023).
- Demolition of existing intake trashrack structure (complete), existing gatehouse (complete) and fish ladder/sediment sluice (partial) (2022).
- Construction of headworks, including the intake structure, retaining walls, and vertical access pipe for sediment management tools (2022).
- Placement of new intake pipeline (2022).

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<sup>4</sup> Temporary cofferdams would likely consist of geo-bags, or non-woven geotextile bags. These are large bags made of synthetic materials, such as polyester, polypropylene, or polyethylene, which are filled with sand, rock, or other material, fastened shut, and used to protect structures or riverbanks from erosion or scour.

- Construction of IO&MA over the headworks, retaining walls, and intake pipeline (2022).
- Placement of guiderails, hydraulic equipment, NMFS-compliant fish screens, slide gates, covered control panel, and safety guardrails around the IO&MA (2022).
- Construction of the PISMA at former gatehouse location (2022).
- Rehabilitation of the outlet channel (2022).
- Construction of roughened channel, including upstream sediment ramp and low-flow boulder weir fishway (2023).
- Supplying LNFH with a temporary water supply of 40 cfs using a temporary above-ground, gravity-fed bypass pipeline connected to the conveyance pipeline or pumping from the spillway pool when necessary (2022).
- Post-construction seeding of disturbed areas that do not have a surface treatment (e.g., gravel) with an upland or riparian seed mix, as appropriate (2023).

Phase II includes:

- Construction activities occurring during workday hours of 7:00 a.m. to 10:00 p.m., 5 days per week, and up to 6 days per week.
- The majority of pipeline lining construction occurring over three seasons during a 4- to 5-week period between April and May.
- Pipeline replacement construction occurring year-round where practicable.
- Replacing conveyance pipeline segments on USFWS property (2022, 2023, and 2024).
- Utilizing existing roads and temporary access routes to gain access to CUAs, as coordinated with private landowners. No improvements are needed to existing roads and access routes.
- CIPP lining of the conveyance pipeline on private parcels from CUAs.
- Temporarily pumping Hatchery water out of the spillway pool during pipeline replacement, lining with CIPP, and pipeline interconnections. Pumping would take place between April 17 and May 20 during the Phase II construction period (2022, 2023, and 2024).
- Constructing new control valve vault and system on USFWS property (2022 and 2023).
- Post-construction seeding of disturbed upland areas (2022, 2023, and 2024).

Phase III includes:

- Planting of riparian tree cuttings in the riparian zone within the Phase I construction area (2024).
- Planting of containerized upland shrubs and trees in uplands within the Phase I construction area (2024).

### **Best Management Practices**

Reclamation would implement practices to protect water quality and other resources and promote soil conservation during Project construction and O&M activities. While these measures are often called Best Management Practices (BMPs), they are conservation measures used to reduce Project impacts on resources and resource uses, including, but not limited to, fisheries and aquatic resources,

Tribal interests, public health and safety, and recreation. BMPs can be a ‘thing’ installed on-the-ground (e.g., silt fence, ground cover vegetation) or a ‘process’ used to plan and conduct an activity (e.g., marking stream buffers). The comprehensive list of BMPs is included in this report as **Appendix B**.

### ***Permitting***

Because Alternative B would include work within Icicle Creek, several federal and state regulatory permit approvals would be required before construction begins. Reclamation would obtain all required regulatory permits prior to construction implementation. Reclamation would use the Washington State Joint Aquatic Resources Permit Application form to apply for applicable permits. Permits that would be obtained include:

- U.S. Army Corps of Engineers (USACE) Section 404 Nationwide Permits
- Washington Department of Ecology (Ecology) Section 401 Water Quality Certification
- Washington Department of Fish and Wildlife (WDFW) Hydraulic Project Approval

Alternative B would also include the use of Icicle Creek Road on National Forest System lands, between the Snow Lakes Trailhead and the Forest Service and Alpine Lakes Wilderness Area kiosk. As a result, Reclamation would secure the required road use approval from the Forest Service, most likely under a special use permit. The kiosk is approximately 1.25 miles southwest of the intake facilities.

### ***Operations and Maintenance***

O&M activities would periodically occur on an as-needed basis as determined by Hatchery staff, including daily visual inspections of the proposed intake facilities. Periodic maintenance of the fish screens would be facilitated by construction of the proposed IO&MA, while O&M of the conveyance pipeline would be facilitated by the PISMA and the new control valve system at the sand settling basin.

Hatchery O&M is subject to both the NPDES permit from the EPA and O&M consultations under the ESA Section 7 with NMFS and USFWS (USFWS 2011; NMFS 2017). Extraordinary maintenance is handled on a case-by-case basis as determined to be necessary by the Hatchery.

#### **1.2.3 Alternative C**

Under Alternative C, Reclamation would rehabilitate the LNFH surface water intake and delivery system on Icicle Creek as described under Alternative B. However, under Alternative C, Reclamation would line the entire upper segment (520 feet) of the conveyance pipeline on USFWS property with CIPP instead of replacing it, as described under Alternative B (**Map A-7** and **Map A-8** in **Appendix A**). As a result, the mature trees in the Icicle Creek riparian zone found in this conveyance pipeline segment would not be removed. Under Alternative C, the length of the conveyance pipeline, from the PISMA to CUA 5 (4,520 feet), would be lined with CIPP. The remaining segments lined with CIPP on private parcels and replaced on the Hatchery grounds proper would be the same as described under Alternative B (see **Map A-7** in **Appendix A**). A conceptual drawing of the proposed intake facilities is included as **Map A-4** in **Appendix A**.

A 20 cfs water supply to LNFH would be maintained during Phase II construction between April 17 and May 20, as described under Alternative B. No temporary pumping would be necessary for pipeline replacement during Phase II construction because the upper segment of the conveyance pipeline on USFWS property would be lined with CIPP instead. As discussed under Alternative B, temporary pumping would be needed while the conveyance pipeline is lined with CIPP, and when pipeline interconnections were underway.

Hatchery O&M is subject to both the NPDES permit from the EPA and O&M consultations under the ESA Section 7 with NMFS and USFWS (USFWS 2011; NMFS 2017). Extraordinary maintenance is handled on a case-by-case basis as determined to be necessary by the Hatchery.

#### **1.2.4 Alternative D**

Under Alternative D, Reclamation would rehabilitate the LNFH surface water intake and delivery system on Icicle Creek as described under Alternative B but with the following differences. Phase I construction activities would be same as Alternative B but would be limited to workday hours of 7:00 a.m. to 10:00 p.m., 5 days per week, and up to 6 days per week. In addition, the in-water work window would be limited to July 1 to October 31 each year. Alternative D was developed to minimize the effects of 24 hours a day construction and reduce the overlap of cofferdam use with a period of greater high-flow risk. Phase II construction activities and schedule would be the same as described under Alternative B. Phase III revegetation efforts would be the same as described under Alternative B except would occur a year later (2025).

The components and elements of the surface water intake facilities and construction activities would be the same as described for Alternative B during Phase I; however, because construction would be limited to workday hours of 7:00 a.m. to 10:00 p.m. and the in-water work window would be two weeks shorter than under Alternative B, construction of Phase I under Alternative D would require four years (i.e., four in-water work windows from 2022 to 2025) to complete. The sequence of Phase I construction activities would be very similar to those listed for Alternative B but would extend through two additional in-water work windows during two additional years (2024 and 2025). Initial mobilization, construction of the intake access road, temporary Hatchery water supply during the in-water work window, access and staging, BMPs, permitting, and O&M would be unchanged from Alternative B. Details of the Phase I construction schedule for intake and fish passage and temporary Hatchery water supply components for Alternative D are provided below.

During the first in-water work window in 2022, preparation for and installation of cofferdams and the gravity bypass pipeline and gravity bypass outlet, demolition of the intake trashrack structure, gatehouse, fish ladder/sediment sluice (partial), and construction of the PISMA and outlet channel, would be the same as Alternative B (**Map A-6** in **Appendix A**). However, because of the shorter workdays and shorter in-water work window, construction of the intake structure would be limited to excavation, preparation and construction of the concrete slab foundation, and partial construction of the intake headworks. At the end of the 2022 in-water work window, the intake structure would be approximately 35 percent completed. Although the full extent of the intake headworks foundation would be in place, the area of the partially constructed intake headworks would be inundated between the 2022 and 2023 in-water work windows after cofferdam removal.

Demobilization of construction equipment in 2022 would leave the constructed elements of the intake structure in this condition until July 2023 when re-mobilization occurs.

From November 1, 2022 to June 30, 2023, the Hatchery's surface water would be supplied by pumping from the spillway pool on Icicle Creek adjacent to LNFH (**Map A-5 in Appendix A**). Two high capacity pumps<sup>5</sup> would provide 40 cfs of water to the Hatchery during this period. An operational third pump would be on site as a backup. The pumps would operate 24 hours per day for the 8-month period; as a result, they would require 24 hour per day, 7 day per week monitoring by the construction contractor.

During the second in-water work window in 2023, preparation for and installation of cofferdams and the gravity bypass pipeline and gravity bypass outlet again would occur as described under Alternative B. The remaining 65 percent of construction of the intake structure components and elements would be completed before cofferdam removal. By the end of the 2023 in-water work window, fish screens would be in place and fully operational, and the temporary gravity bypass pipeline and gravity bypass outlet would be removed. In addition, the transition to the new intake structure would be completed by connecting intake facilities to the conveyance pipeline to deliver the LNFH surface water supply by October 31, 2023. Because the intake structure would be fully operational at the end of this in-water work window, there would be no need to supply temporary water to the Hatchery during the remainder of Phase I construction.

During the third in-water work window in 2024, mobilization similar to previous Phase I in-water work window construction seasons would be required before construction of the low-flow boulder weir fishway and the left bank portion of the roughened channel could occur. Construction of the low-flow boulder weir fishway and the left bank portion of the roughened channel would include placement of cofferdams, dewatering of the construction area, regrading of the stream channel bottom, construction of the low-flow boulder weir fishway and the left bank portion of the roughened channel and finally, removal of the cofferdam.

During the fourth in-water work window in 2025, mobilization similar to previous Phase I in-water work window construction seasons would be required before construction on the remaining portion (right bank) of the roughened channel could occur. Construction of the remaining portion of the roughened channel would include placement of cofferdams, dewatering of the construction area, regrading of the stream channel bottom, construction of the roughened channel and finally, removal of the cofferdam. Once the entire roughened channel is complete and all cofferdams have been removed, the intake facilities would undergo final testing and commissioning to ensure proper operation and compliance with NMFS current screening and fish passage criteria for anadromous fish passage facilities (NMFS 2011), which would occur by October 31, 2025.

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<sup>5</sup> Pumps are assumed to be high-lift, 16-inch, trailer-mounted with 150 horsepower diesel engines.

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# Chapter 2. Relevant Laws, Regulations, and Policy

The National Environmental Policy Act of 1969 (NEPA) invokes the National Historic Preservation Act of 1966 (NHPA) and implementation of the regulations implementing Section 106 of the act. State laws and regulations only apply if any portion of the Project occurs outside federally-owned land. There are no local government cultural resources ordinances that apply within the area of potential effects (APE).

## 2.1 Federal Laws, Regulations, Statutes, and Orders

**Columbia Basin Project Act of March 1943 (57 Stat. 14, Public Law 78-8)** – This act reauthorized the Columbia Basin Project, bringing it under the provisions of the Reclamation Project Act of 1939.

NEPA and NHPA provide for the consideration of historic properties; the USFWS guidance follows federal regulations for these laws. NHPA Section 106 states that any federal or federally assisted project or any project requiring federal licensing or permitting must consider the project's effects on historic properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP) (54 United States Code [USC] 306108). Regulations governing the Section 106 review process are contained in 36 Code of Federal Regulations (CFR) 800, Protection of Historic Properties. Properties include historic and prehistoric archaeological sites, as well as buildings, structures, objects, landscapes, and historic districts (an area possessing a significant concentration, linkage, or continuity of sites, buildings, structures or objects unified historically or aesthetically by plan or physical development). The NHPA also provides for consultation with Indian Tribes when proposed projects might affect cultural or traditional places that have value to an Indian Tribal group, derived from the role the property plays in the community's historically rooted beliefs, customs, and practices (54 USC 302701).

Regulations in 36 CFR 800 provide a step-by-step process for satisfying the Section 106 requirements. There are four steps:

- 1) Initiate consultation with regulatory agencies, concerned Indian Tribes, and other interested parties
- 2) Identify historic properties
- 3) Assess adverse effects
- 4) Resolve adverse effects

Significant properties are evaluated in consultation with the Washington State Department of Archaeology and Historic Preservation (DAHP) and must qualify for listing in the NRHP by being at least 50 years old, in most cases, and by meeting specific eligibility criteria and standards of integrity (36 CFR 60.4). The current investigation is designed to identify prehistoric and historic-

period archaeological sites, historic buildings, structures, historic districts, and Traditional Cultural Properties (TCPs) within the APE, and to evaluate their NRHP eligibility, to the extent feasible, using existing records and literature. To consider the potential concerns of Indian Tribes, the investigation also reviews the American Indian Religious Freedom Act of 1978 and Executive Order 13007 (access to and ceremonial use of sacred sites by Indian religious practitioners).

## **2.2 State and Local Laws**

Where the APE extends beyond federally-owned land, the Revised Code of Washington (RCW) 27.44, Indian Graves and Records, protects Indian burials; RCW 27.53, Archaeological Sites and Resources, protects archaeological sites.



# Chapter 3. Affected Environment

## 3.1 Analysis Area

The NHPA, as amended, requires the lead agency for any federal undertaking to establish an APE within which to identify historic properties that a proposed action may affect. An APE is the geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, which are defined as cultural resources that are, or may be eligible for, inclusion in the NRHP. Historic properties may include archaeological sites; historic buildings, structures, and objects; landscapes; and properties of historic or religious significance to Native American Tribes and other ethnic communities (e.g., TCPs).

The Analysis Area for cultural resources is the APE (**Map A-9 in Appendix A**). In early 2020, the USFWS, the designated lead agency for carrying out the NHPA Section 106 review for this Project in accordance with 36 CFR 800, initiated consultation with the DAHP to delineate the Project's APE and to identify historic properties within the APE. On February 11, 2020, the USFWS received concurrence on the Project's APE, which begins at an area centered on the existing intake facilities and follows the route of the conveyance pipeline to the Project end point at the sand settling basin.

## 3.2 Physical Environment

### 3.2.1 Topography and Geology

The Analysis Area lies within the Icicle Creek Valley, approximately 1.3 miles south of the mouth of the creek, at its confluence with the Wenatchee River. The Icicle Creek Valley is one of many narrow, low-lying valleys within the eastern foothills of the North Cascades physiographic province. These mountains were created by uplifting that occurred during the Pliocene geological epoch followed by andesite flows during the Pleistocene epoch. Fine- to course-grained glacial till was deposited in the major valleys of the region during this time (Franklin and Dyrness 1973, pp. 17–19). The Analysis Area is also intersected by the west end of the southern portion of the Okanogan Highlands physiographic province (Franklin and Dyrness 1973, p. 6). Miocene basalt flows extruded across this area and buried earlier bedrock up to a mile deep. Pleistocene glaciation shaped the Okanogan Highlands by removing soil and abrading exposed metamorphic and granitic rock (Chatters 1998, p. 32).

Soils in the Analysis Area are the fine sandy loams and loamy sands of the Leavenworth series, which formed in recent alluvium from granite, gneiss, schist, and micaceous sandstone rocks. This soil generally consists of sandy loam that is gravelly in places and overlies stratified layers of loamy fine sand and loam to at least 59 inches (150 centimeters) below surface (Aymond and Dampf 2018). See the SWISP Project EIS **Geology and Soils Resource Report** for more information on geology and soils in the Analysis Area.

### 3.2.2 Climate and Vegetation

The climate of the Analysis Area is semiarid due to its position on the leeward, east side of the Cascade Range, which creates a rain shadow and progressively drier conditions from the crest of the

range eastward into the Columbia basin. See the SWISP Project EIS **Air Quality and Climate Report** for more information on climate in the Analysis Area.

Vegetation within the Analysis Area and surrounding area is reported to be within the three-tip sagebrush/Idaho fescue (*Artemisia tripartita*/*Festuca idahoensis*) vegetation association, which exists in the northern and northeastern portions of the Columbia Plateau with generally semiarid conditions (Franklin and Dyrness 1973, p. 222). However, vegetation types in the Analysis Area were ground-truthed, and include Disturbed Ponderosa Pine Woodland and Savanna, Developed and Landscaped, and Mixed Conifer Forest. Land use activities have substantially altered the historical vegetation within the Analysis Area and vicinity, resulting in fragmented native vegetation communities with nonnative vegetation components. See the SWISP Project EIS **Biological Resources Report** for more information on vegetation in the Analysis Area.

### 3.2.3 Fauna

Numerous faunal resources would have been available to Native American Tribes in the Analysis Area. Mammals found in the area include whitetail deer (*Odocoileus virginianus*), Rocky Mountain elk (*Cervus elaphus nelsoni*), bighorn sheep (*Ovis canadensis*), mountain lion (*Puma concolor*), black bear (*Ursus americanus*), fox (*Vulpes* spp.), coyote (*Canis latrans*), gopher, and porcupine (*Erethizon dorsatum*). Grouse, quail, and wild turkey (*Meleagris gallopavo*) are among the common birds of the area. Many different species of fish, such as various salmon species, Steelhead Trout and Rainbow Trout (*Oncorhynchus mykiss*), Redband Trout (*O. m. gairdnerii*), and White Sturgeon (*Acipenser transmontanus*), are present in the rivers and streams in the surrounding area, including Icicle Creek and the nearby Wenatchee River (Schlegel and Mauser 2008). See the SWISP Project EIS **Biological Resources Report** for more information on fish and terrestrial wildlife in the Analysis Area.

## 3.3 Cultural Context

### 3.3.1 Precontact Background

Based on current archaeological evidence, human occupation in the region began at least by approximately 14,000 years before the present (BP). The Manis Mastodon Site (45CA218) near Sequim, Washington, yielded evidence for mastodon hunting dating to 13,800 years ago (Waters et al. 2011, p. 351). Other sites in northwest Washington and southeastern Oregon contain evidence for human occupation dating to the period between 12,000 and 14,000 years BP (Haynes 1991; Jenkins et al. 2012; Kenady et al. 2011; Kopperl et al. 2015a, 2015b; Waters et al. 2011).

Evidence for human occupation in the more immediate vicinity of the APE dates to more than 11,000 years BP. At the Richey-Roberts Clovis site in East Wenatchee, a cache of Clovis-type projectile points has been considered to date to approximately 11,000 BP or perhaps earlier (Mehring and Foit 1990; Waitt 2016). This early date corresponds to what has been classified as the Paleoarchaic period of the Columbia Plateau (pre-11,000 BP to 8000 BP) (Andrefsky 2004, p. 26). Archaeologically, this time period is usually marked by the presence of stemmed, Windust-type projectile points (Brown et al. 2019) and a few fluted Clovis points (Andrefsky 2004, pp. 26, 27). Other types of artifacts from this period include bifacially flaked stone knives, edge-ground cobbles, and expedient tools. The archaeological evidence indicates that people procured a variety of game,

waterfowl, and fish and gathered plants during this period (Andrefsky 2004, p. 28; DePuydt 1990, p. 15; Galm et al. 1981, p. 91).

The Early Archaic period (8,000 to 5,000 BP) includes assemblages of leaf-shaped projectile points (i.e., Cascade points), scrapers, bone awls, side-notched projectile points, triangular knives, microblades, and Olivella beads (Ames et al. 1998; Andrefsky 2004, p. 28; Chatters and Pokotylo 1998; DePuydt 1990, p. 16; Galm et al. 1981, p. 58). Subsistence practices during this period appear to have been generally similar to the preceding Paleoarchaic period (Andrefsky 2004, pp. 28–30).

By the time of the Middle Archaic (5,000 to 2,000 BP), there was a shift in subsistence associated with a greater emphasis on fish and freshwater mussels, reflecting an increasing emphasis on riverine resources. Camas gathering and processing also occurred during this time (Andrefsky et al. 2000). Stone tools reflective of the processing of procurement and processing of plant foods and fish include net weights, mortars, and pestles (Leonhardy and Rice 1970). This period also marks the appearance of pit house villages on the Columbia Plateau, indicative of the establishment of more sedentary lifeways (Ames et al. 1998; Andrefsky 2004, p. 30; Chatters and Pokotylo 1998).

The Late Archaic (2,000 BP to anno Domini [AD] 1720) is characterized by the presence of large, nucleated pit house village sites. The evidence indicates that subsistence intensification was practiced during this time and involved a focus on salmon, ungulates, and geophytes, with freshwater mussels also a key subsistence resource (Andrefsky 2004; Butler and Campbell 2004; Chatters 1995; Prentiss et al. 2005, p. 66). Storage facilities developed for surplus food resources. The Avey's Orchard site near Wenatchee has yielded evidence indicating a communal longhouse with multiple domestic units (Galm and Masten 1985). The presence of prestige goods, such as nephrite adzes and incised dentalium shells, in archaeological sites throughout the Columbia Plateau during the Late Archaic is indicative of complexity and an active regional trade network (Hayden and Rick 1997; Prentiss and Chatters 2003).

### 3.3.2 Ethnographic Background

The Analysis Area is located within the traditional homeland of the Wenatchi (šnpəšq'áwšəxʷ). The Wenatchi are part of the Middle Columbia dialect group of Salishan speakers that also includes the Chelan, Methow, and Columbia (Chalfant 1974; Ray 1933, pp. 10, 11; Ray 1936). The name Wenatchi, however, does not have Salishan roots. Instead, it originated from the Sahaptin Yakama word used to refer to the forks of the Wenatchee River (Winátsha) (Curtis 1911, p. 69).

Based on the ethnographic accounts relating to the areas occupied by its constituent bands, the territorial extent of the Wenatchi has been mapped on the west side of the Columbia River to the south and west of the Entiat River, centered around the Wenatchi River and its tributary drainages toward the crest of the Cascade Range. The lands on the east side of the Columbia River near the confluence of the Wenatchee and Columbia Rivers have also been attributed to the Wenatchi. To the south, the Wenatchi homeland extended into the upper part of the Yakima River drainage system (Ray 1936, p. 103; Scheuerman 1982, pp. 16, 17; Teit 1928, p. 93).

Within the region, the Wenatchi occupied numerous villages located along the Wenatchee and Columbia Rivers, each of which was associated with a specific small band (Curtis 1911, p. 69; Ray

1933, p. 11; Teit 1928, p. 95). Several of the villages were located at or near the confluence of the Wenatchee and Columbia Rivers and along the Wenatchee River at the mouths of Mission Creek, Icicle Creek, and the Chiwawa River (Ray 1936, pp. 142, 143; Ray 1975, pp. 233–236; Scheuerman 1982, pp. 27, 28). Villages in general were located at or near productive fisheries in sheltered locales (Hunn 1990, p. 369).

The nearest Wenatchi village to the APE was known as *tc̓̓ma·us* (“narrow in the middle”). It was located near the mouth of Icicle Creek, approximately 1.7 miles north of the APE. This village was adjacent to the most important traditional fishing ground (known as Wenatchapam) for the Wenatchi. It reportedly had a resident population of approximately 200 from 40 families; the population would grow to 2,000 to 3,000 during the height of the salmon fishing season (Ray 1936, p. 143; Scheuerman 1982, pp. 25, 26). The name of the band residing at the village was known as *Sinpusqoisoh* (Curtis 1911).

The Wenatchapam fishery was used by the Wenatchi for centuries. During seasonal salmon runs, the Wenatchi and invited neighboring groups gathered at the fishery, where they built weirs and dried fish on drying racks for later consumption (Hart 2000, p. 165; Ray 1936, p. 43). The use of the Wenatchapam fishery by multiple groups during peak times reflects a common pattern in the Columbia Plateau region, where groups would collectively gather for specific purposes and travel between different group territories (Anastasio 1972, p. 152). The group included the Wenatchi, Chelan, Sanpoil, Nespelem, Methow, Kittitas, Columbia, and Yakama (Anastasio 1972, p. 157).

Villages throughout the Wenatchi territory were primarily occupied during the winter months, although there were exceptions to this pattern. This was the case with *tc̓̓ma·us* where a large aggregate population was present during salmon runs in the spring and fall. The typical residential architecture among Salish-speaking groups throughout the Columbia Plateau region was comprised of pole structures covered with tule or cattail mats that formed the roofs. These houses commonly took the form of oval-shaped longhouses that contained entrances at each end. Multiple families lived in the longhouse, with each having their own section with its respective fire hearth and smoke hole in the roof of the house (Curtis 1911, p. 69).

Beyond the individual village, there was no formal traditional Tribal administration and, like other groups throughout the region, the Wenatchi were more of a Tribe in a linguistic and cultural sense than in a political sense (Ray 1936, p. 112). Cohesion within the Wenatchi was fostered through intermarriage between villages and during group subsistence activities, such as root gathering, when residents of numerous villages gathered and engaged in a common activity (Ray 1936, pp. 116, 117).

Wenatchi subsistence practices revolved around the seasonal availability of specific resources. Anadromous salmon, available in runs between the months of May and November, is considered to have been the primary traditional staple food among the Wenatchee (Miller 1998, p. 255; Ray 1933, p. 28). The fish was split, dried, and wrapped in tule matting. After being prepared in this manner, the salmon was stored in the house or among rocks for winter consumption (Curtis 1911, p. 5). Surplus salmon was also a commodity in the regional trade network (Hunn 1990, p. 368).

Other fish species procured by the Wenatchi include trout, particularly Steelhead Trout; lamprey eel; chub; white fish; sturgeon; and suckers (Hunn 1990, p. 369; Ray 1933, pp. 57, 58). In general, fish were caught using spears, traps, and seines (Ray 1933, pp. 58–69).

Among plant foods, edible roots and bulbs were the most significant in terms of their contribution to subsistence. These plants include bitterroot, arrowleaf balsamroot, various types of *Lomatium*, and camas (*Camassia quamash*) (Scheuerman 1982, pp. 28–30). The roots were gathered from late spring into the summer months as people set up camps in upland locales with abundant roots. The roots were processed by drying or baking at the camps and taken back to villages for winter consumption (Hunn 1990, pp. 366, 368, 369). An important camas gathering area and associated camp for the Wenatchi was located at present-day Leavenworth, approximately 3 miles north of the APE (Sharley and Hamilton 2017). For Columbia Plateau groups in general, plant foods, especially roots and bulbs, are estimated to have traditionally contributed up to 50 percent or more of total subsistence needs (Hunn 1981, p. 129).

Berries, such as currants, chokecherries, saskatoon berries, blueberries, service berry, blackberries, elderberries, and huckleberries, were gathered from mountain locations in the summer and fall. They were dried for storage and winter consumption. The meadow habitats where berries thrived were maintained by deliberate, periodic burning (Hunn 1990, p. 369; Scheuerman 1982, pp. 40–42).

Deer, mountain goat, bear, and elk were among the primary animals hunted by the Wenatchee (Curtis 1911, p. 70; Miller 1998; Ray 1933, pp. 77–82). Rabbit, otter, cougar, coyote, fox, badger, marmot, and marten are among other animals hunted (Ray 1933, pp. 85–87). These land mammals were procured for their meat and for their hides, pelts, or wool (in the case of mountain goats) for clothing and blankets (Scheuerman 1982, p. 43; Teit 1928, pp. 113, 116). Birds, such as eagle, grouse, and various types of waterfowl, were also hunted (Ray 1933, pp. 85–87; Scheuerman 1982, p. 43).

The traditional lifeway of the Wenatchi was altered as a result of contact with non-Native explorers, fur traders, and settlers who introduced foreign diseases. Prior to direct contact with non-Native people, introduced diseases such as smallpox had a devastating effect on Native American populations in the region by the eighteenth century and possibly earlier (Miller 1990, pp. 15, 16). It has been estimated that by the end of the nineteenth century, the region experienced a population decline of nearly 80 percent in comparison with precontact times, primarily as a result of introduced diseases (Boyd and Gregory 2007; Hart 2000, p. 167).

As non-Native settlement increased by the middle of the nineteenth century, Native groups throughout the region ceded vast amounts of territory in treaties with the United States (U.S.) government. Numerous groups, including the Wenatchi, negotiated the Yakima Treaty of 1855 with the U.S. government that resulted in the ceding of large amounts of land in central and eastern Washington, including the Wenatchi traditional territory. According to Article X of the Yakima Treaty of 1855, which resulted in the establishment of the Yakima Reservation, the Wenatchi were to be granted a separate reservation at the location of the Wenatchapam fishery (Hart 2000, p. 164). This reservation was never established due to various circumstances, primarily as a result of dealings and negotiations with local U.S. government Indian agents that have been described as unjust by modern legal scholars (Hart 2000, pp. 177–192; Shutler 2011, pp. 1006–1012). Since the middle of

the nineteenth century, many Wenatchi have settled at both the Yakima Reservation and Colville Reservation (Ray 1974, p. 29). Wenatchi people from both the Yakima and Colville Reservations have continued to fish at the Wenatchapam fishery (Shutler 2011, p. 1022); see **Section 3.10**, Tribal Interests, in the SWISP Project EIS.

### 3.3.3 Historic Background

The sustained presence of non-Native people in the Analysis Area appears to have begun in the 1850s when miners began passing through the area on the way to gold mines in the Fraser River area of British Columbia (Scheuerman 1982, pp. 87–89). By 1873, Father Urban established the Saint Francis Xavier Mission near present-day Cashmere, approximately 10 miles to the east of the Project Area (Scheuerman 1982, p. 108). The earliest non-Native settlement in the more immediate Project vicinity commenced toward the end of the nineteenth century, coinciding with railroad development in the area. In 1892, workers grading the alignment of the Great Northern Railway railroad constructed a small town known as Icicle about 1 mile up the Wenatchee River from present-day Leavenworth (Steele and Rose 1904, p. 730). By this time, there were also scattered homesteads established around the confluence of Icicle Creek and the Wenatchee River (USSG 1892).

The location of Leavenworth was established as a townsite when the Great Northern Railway purchased land there to create a division point for the railroad in 1893, at which time town development shifted from Icicle to Leavenworth (Steele and Rose 1904, p. 730). The town was named after Captain Charles Leavenworth of Portland, Oregon, a prominent investor in the Okanogan Investment Company who purchased land along the Great Northern Railway railroad tracks (Arksey 2010).

Leavenworth was incorporated in 1906, at which time it became a center for the area's timber and mining industries, and the surrounding vicinity held potential as a hub for orchard fruit and other crops, such as alfalfa and timothy. Its position along a major railroad line made Leavenworth a suitable center for mining in the nearby mountains and canyons (Arksey 2010; Steele and Rose 1904, pp. 710, 711, 729). An irrigation system also was developed for orchards in the area (Arksey 2010). However, the timber industry emerged as the most prominent aspect of the local economy. The Lamb-Davis Lumber Company purchased land at Leavenworth and established it as the base of operations in 1903 (Steele and Rose 1904, p. 731). The company built a sawmill in Leavenworth and employed 200 workers by 1906. The Lamb-Davis Lumber Company founded the first bank in Leavenworth, the Tumwater Savings Bank, and developed the town's early public works infrastructure (Arksey 2010).

However, in the 1920s, the Lamb-Davis Lumber Company sawmill was shut down. The Great Northern Railroad relocated yard facilities to nearby Wenatchee and rerouted the railroad tracks. The mining industry had also gone into decline by this time, and the local climate proved to be unreliable for orchards in comparison with areas farther down the Wenatchee River. After decades of bleak economic prospects, Leavenworth was revived after adopting a Bavarian theme and becoming a tourist destination in the 1960s (Arksey 2010).

The historic context of the APE, apart from scattered early settlement in the vicinity, is dominated by the development of the LNFH. The LNFH was a product of a period of massive hydroelectric

development on the Columbia River in the 1930s and early 1940s. When plans for the Grand Coulee Dam project threatened to decimate salmon and Steelhead Trout runs on the upper Columbia River, the federal government funded construction of the largest national fish hatchery at the time at Leavenworth. Construction began on the Hatchery in 1939 and was completed in 1941. A collaboration between experts from the Bureau of Fisheries, Reclamation, and Washington State Fisheries office, the state-of-the-art facility featured experimental fish ponds and designed spawning areas within the natural meander of Icicle Creek (Speulda 1997, p. 7-2).

A critical aspect of the project was ensuring a reliable supply of water within a certain temperature range for Hatchery and rearing operations. The original design built in two sources of water for the Hatchery, ponds, and raceways: one was a primary supply diverted from Icicle Creek about 2 miles upstream of the Hatchery through a pipeline; the other was a supplemental source of water stored in a reservoir at Snow Lake, some 8 miles away, for use during the summer months when flow was lower and the temperatures higher in Icicle Creek. The diversion point for the primary water supply consisted of a low weir-type dam that diverted water into an open channel or canal to an intake structure. The intake structure, a concrete-walled chamber topped by a wood-framed, gable-roofed building, screened the water before it entered over 1 mile of wood-stave pipeline that ended at another screening chamber near the Hatchery. Since original construction, the USFWS has made several alterations to the primary water supply system. An additional screening structure with an integrated fish ladder was added at the entrance to the open channel, the intake structure was modified, and the wood-stave pipe was replaced with a concrete-lined pipe (Speulda 1997, p. 7-7). The primary water supply from the diversion dam on Icicle Creek remains a vital component of the fish Hatchery.

While Reclamation initially operated the LNFH, the USFWS took over the facility in 1945. Since then, the LNFH has been a site of research, experimentation, and continued production of different types of salmon and trout. The site has changed significantly from the original design with various buildings and structures added over the decades of its operation (Speulda 1997, p. 8-9).

## 3.4 Known Cultural Resources

### 3.4.1 NHPA Historic Properties

#### ***Aboveground/Architectural Resources***

A review of the Washington Information System for Architectural and Archaeological Records Data (WISAARD) identified no previously recorded historic aboveground/architectural properties (as defined by the NHPA) within the APE except for the LNFH Historic District (see glossary of defined terms in **Chapter 5**). The boundaries of the LNFH Historic District, which centers on the Hatchery complex, overlap with portions of the Project Area intended for either underground pipeline replacement or construction staging; no alterations are proposed for contributing resources to the district. The APE includes four noncontributing resources associated with water supply for the LNFH: a diversion dam, intake canal, intake structure, and water supply pipeline. These resources, previously determined noncontributing resources due to a lack of historic integrity, are located approximately 2 miles upstream from the main Hatchery complex and outside the boundary of the LNFH Historic District.

### **Archaeological Resources**

HRA performed a records review on the WISAARD for archaeological resources within 1 mile of the APE (see glossary of defined terms in **Chapter 5**). No archaeological resources have been previously recorded within the APE, and four archaeological resources have been previously recorded within 1 mile of the APE. The archaeological resources consist of historic-period sites 45FS1582, 45FS1583, and 45CH935; and precontact site 45CH943. The nearest previously documented archaeological site to the APE is 45CH935, a historic-period archaeological site comprised of a concrete block structure in ruin near Icicle Creek adjacent to the southern end of the APE that has been identified as a former water control structure. The site has been determined not eligible for listing in the NRHP (Lancaster 2017a, 2017b).

Site 45FS1582 is comprised of the remnants of a circa 1911 historic irrigation flume and associated historic-period debris on a west-facing ridge slope approximately 0.6 miles to the southeast (Christensen 1995a). Site 45FS1583 is a scatter of historic-period debris with diagnostic artifacts consisting of batteries and glass and porcelain insulators that likely date to the 1940s and 1950s (Christensen 1995b). Site 45FS1583 is located adjacent to 45FS1582, and both sites were documented by the Forest Service. Neither site has been formally evaluated for NRHP eligibility.

Precontact site (45CH943) is located approximately 0.8 miles to the north of the APE near the confluence of Icicle Creek and the Wenatchee River. The site consists of a large artifact scatter consisting of lithic debitage, a projectile point, mussel shell fragments, fire-modified rock, and calcined bone. The artifacts were identified on the surface at depths of up to 35 inches (90 centimeters) below the surface in shovel probe excavations (Tarman 2018). This site was determined eligible on September 19, 2018, according to the Washington Information System for Architectural and Archaeological Records Data. However, since it falls outside of the APE, it is not analyzed further in this report.

### **Native American Resources**

No TCPs have been documented in or within 1 mile of the APE. The nearest recorded TCP to the APE is the Leavenworth Camas Harvesting Area (45CH928) located in the northern part of Leavenworth approximately 3 miles north of the APE. The TCP is at the location where Native Americans camped and gathered camas in the past (Sharley and Hamilton 2017).

#### **3.4.2 NEPA Historic Resources**

As discussed above, NEPA requires a broader consideration of cultural resources beyond the NHPA definition of historic properties. Therefore, additional survey of aboveground, architectural resources examined other potential impacts of the proposed Project. Research identified no local or county historic registers that listed historic properties within the APE or in the vicinity of the proposed Project.

The low-head diversion dam existing intake facilities are not visible from Icicle Creek Road, and the existing intake facilities are not accessible to the public. Given their relatively small scale, remote location outside of town, and the lack of visibility, the low-head diversion dam and existing intake facilities have a low potential as an iconic or familiar cultural landmark in the local community. In sum, no significant aboveground, architectural resources have been identified in the APE that meet the broader definition of cultural resources under NEPA.



# Chapter 4. Environmental Consequences

## 4.1 Methods

### 4.1.1 Analysis Indicators

Indicators for the cultural resources analysis include:

- The number of historic properties or other cultural resources the proposed Project's activities would affect

Historic properties are defined in the NHPA, but they may be a subset of cultural resources as defined under NEPA. The degree of impacts on historic properties is measured by whether the impacts cause the loss or degradation of the characteristics of the resource that lend its significance (and therefore make it eligible for listing in the NRHP).

### 4.1.2 Issue Statements

An Agency Scoping Meeting held on May 12, 2020, and other review of the Project as initially scoped by the Tribes and federal agencies identified the following issues related to cultural resources:

- The USACE requested inclusion in and information on Section 106 consultation with DAHP as it pertained to application for USACE permit.
- Yakama Nation requested Reclamation complete Government-to-Government consultation under Section 106 and include inadvertent discovery plan.
- Commenters noted that the EIS should identify historic properties, including any Tribal, cultural, or other treaty resources, or cultural properties, evaluate potential adverse impacts to cultural resources, and discuss alternatives and mitigation measures that would avoid and minimize potential adverse impacts to cultural resources.
- Commenters requested that the EIS should identify and disclose any impacts to culturally important plant or wildlife species.

### 4.1.3 Assumptions

The cultural resource analysis is based on the assumptions that:

- The APE accurately reflects the proposed Project's actual construction and ground disturbance.

## 4.2 Alternative A – No Action Alternative

Under the No Action Alternative, the low-head diversion dam, intake trashrack structure, intake channel, and conveyance pipeline would remain in their current condition. As such, there would be no adverse effect on historic properties or cultural resources from a regulatory standpoint under Alternative A.

It is possible the continued deterioration of the nearly 80-year-old existing intake facilities, which have undergone several alterations since original construction, and the concrete pipeline may adversely affect Hatchery operations, and to a lesser degree, buildings or structures within the LNFH Historic District. High sediment loads from the existing intake facilities, for example, might result in increased scouring or other adverse effect in the screen chamber, a contributing resource to the Historic District. From this perspective, the Alternative A poses a greater risk to historic properties than the Proposed Action.

There are no documented archaeological resources eligible for listing in the NRHP or documented Native American TCPs that would be affected by Alternative A. This alternative would also have the least amount of impact on any potentially undocumented archaeological resources that may be eligible for listing in the NRHP, given that there are no ground disturbing activities proposed.

### **4.3 Alternative B – Proposed Action**

No significant aboveground architectural cultural resources as defined by the NHPA have been identified in the APE under Alternative B. The effects of Alternative B on cultural resources under the broader NEPA definition were assessed as well. In the absence of local historic register or landmark regulations, the aboveground architectural resources in the APE affected by Alternative B—the low-head diversion dam and existing intake facilities—were evaluated for their potential as iconic or familiar cultural landmarks in the local community. The dam and intake facilities are not visible from Icicle Creek Road nor are they accessible to the public. Given their relatively small scale, remote location outside of town, and lack of visibility, the low-head diversion dam and existing intake facilities have low potential as an iconic or familiar cultural landmark in the local community. Consequently, Alternative B was determined to pose no adverse effect on historic properties or cultural resources under both NHPA and NEPA regulations.

In a March 12, 2020 letter, DAHP concurred with the USFWS determination that the proposed action would not adversely affect any historic properties under the provisions of the NHPA. Therefore, no mitigation for the Project's impact on cultural resources is required.

No archaeological sites eligible for listing in the NRHP or Native American TCPs have been identified in the APE under Alternative B. In a March 12, 2020 letter, DAHP concurred with the USFWS determination, as stated above, that the proposed action would not adversely affect any archaeological sites eligible for listing in the NRHP or Native American TCPs. This concurrence of no adverse effects was made with the stipulation that professional archaeological monitoring and an inadvertent discovery plan be included as part of the proposed undertaking (see **Table B-1** in **Appendix B**).

### **4.4 Alternative C**

Alternative C presents no substantive difference in effects to historic properties as defined by the NHPA compared to Alternative B. Because the conveyance pipeline itself has been determined a noncontributing resource to the LNFH Historic District, whether it is lined or replaced has no bearing on historic properties. As an underground component of the system, the conveyance

pipeline is not visible and does not represent an iconic or familiar cultural landmark in the local community. Therefore, Alternative C would have no adverse effect on historical properties.

From the perspective of archaeological resources eligible for listing in the NRHP and Native American TCPs, Alternative C would not constitute an adverse effect on historic properties. However, the stipulations for professional archaeological monitoring and an inadvertent discovery plan, as requested by DAHP in its March 12, 2020 concurrence letter, will apply to any ground-disturbing activities associated with Alternative C (see **Table B-1** in **Appendix B**).

## **4.5 Alternative D**

Alternative D presents no substantive difference in effects to historic properties as defined by the NHPA or to cultural resources as defined under NEPA compared to Alternative B. Alternative D would have no adverse effect on historic properties, archaeological sites eligible for listing in the NRHP, or Native American TCPs. The stipulations for professional archaeological monitoring and an inadvertent discovery plan, as requested by DAHP in its March 12, 2020 concurrence letter, will still apply to any ground-disturbing activities associated with Alternative D (see **Table B-1** in **Appendix B**).

## **4.6 Short-Term Uses and Long-Term Productivity**

Potential short-term uses of the environment that relate to cultural resources include ground disturbance associated with removal of the intake structure, canal, and alterations to the diversion dam; ground disturbance associated with lining and replacing the water pipeline and use of the staging areas; and demolition of the LNFH structures.

Although long-term productivity is a difficult metric to apply to cultural resources, none of the short-term uses associated with the Project alternatives would pose a long-term effect on cultural resources as defined by the NHPA.

## **4.7 Unavoidable Adverse Impacts**

None of the Project alternatives pose an unavoidable adverse impact on cultural resources.

## **4.8 Irreversible and Irretrievable Commitment of Resources**

None of the Project alternatives pose an irreversible or irretrievable commitment to cultural resources.

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# Chapter 5. Glossary

**Archaeological site.** A location that contains material remains of past human activities, generally defined as over 50 years old.

**Artifact.** A human-modified object, often appearing on an archaeological site, that typically dates to over 50 years in age.

**Cultural resources.** The present expressions of human culture and the physical remains of past activities, such as historic buildings, structures, objects, districts, landscapes, and archaeological sites. These resources can be significant in the context of national, regional, or local history, architecture, archaeology, engineering, or culture. They may also include sacred sites and natural features of landscapes that are significant to living communities.

**Historic built environment.** Buildings, structures, objects, districts, and linear features, such as roads, trails, and irrigation ditches, that are at least 50 years old.

**Historic district.** An area possessing a significant concentration, linkage, or continuity of sites, buildings, structures or objects unified historically or aesthetically by plan or physical development.

**Historic property.** Cultural resources, such as historic buildings, structures, objects, districts, or archaeological sites, that are listed on, or eligible for listing on, the National Register of Historic Places.

**National Register of Historic Places.** A listing of resources that are considered significant at the national, state, or local level and that have been found to meet specific criteria of historic significance, integrity, and age

**Paleontological resources.** Any fossilized remains or traces of organisms that are preserved in, or on, the earth's crust; that are of scientific interest; and that provide information about the history of life.

**Traditional cultural property (TCP).** Ethnographic resources, such as sacred sites, that are associated with the cultural practices of a living community and that meet the criteria for listing on the National Register of Historic Places.

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# Appendix A

Maps

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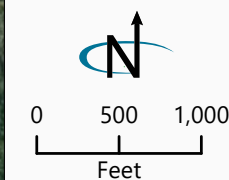
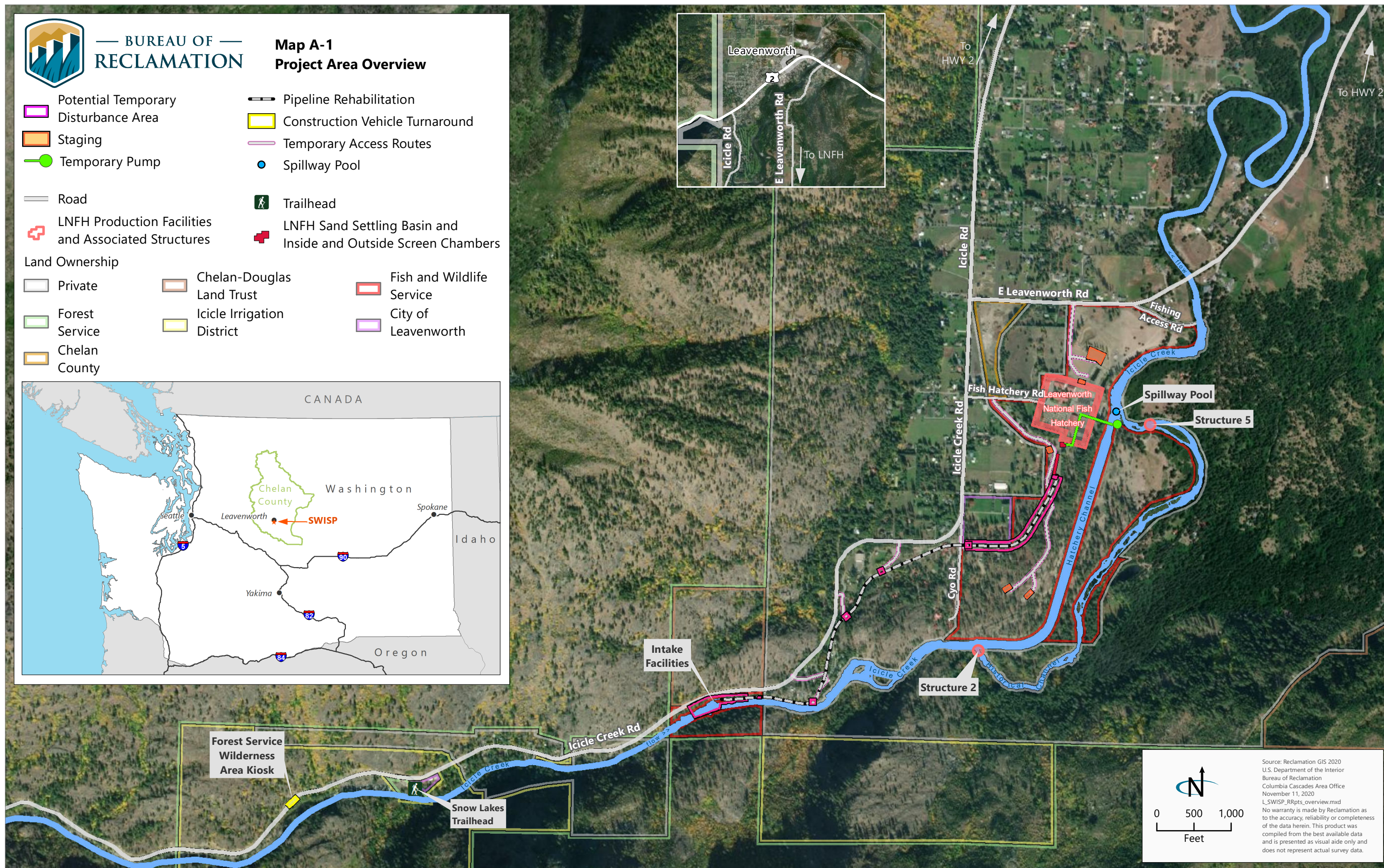




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### Map A-1 Project Area Overview

- Potential Temporary Disturbance Area
- Staging
- Temporary Pump
- Pipeline Rehabilitation
- Construction Vehicle Turnaround
- Temporary Access Routes
- Spillway Pool
- Trailhead
- LNFH Production Facilities and Associated Structures
- LNFH Sand Settling Basin and Inside and Outside Screen Chambers
- Road
- Land Ownership
  - Private
  - Forest Service
  - Chelan County
  - Chelan-Douglas Land Trust
  - Icicle Irrigation District
  - Fish and Wildlife Service
  - City of Leavenworth



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U.S. Department of the Interior  
Bureau of Reclamation  
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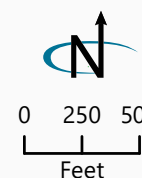
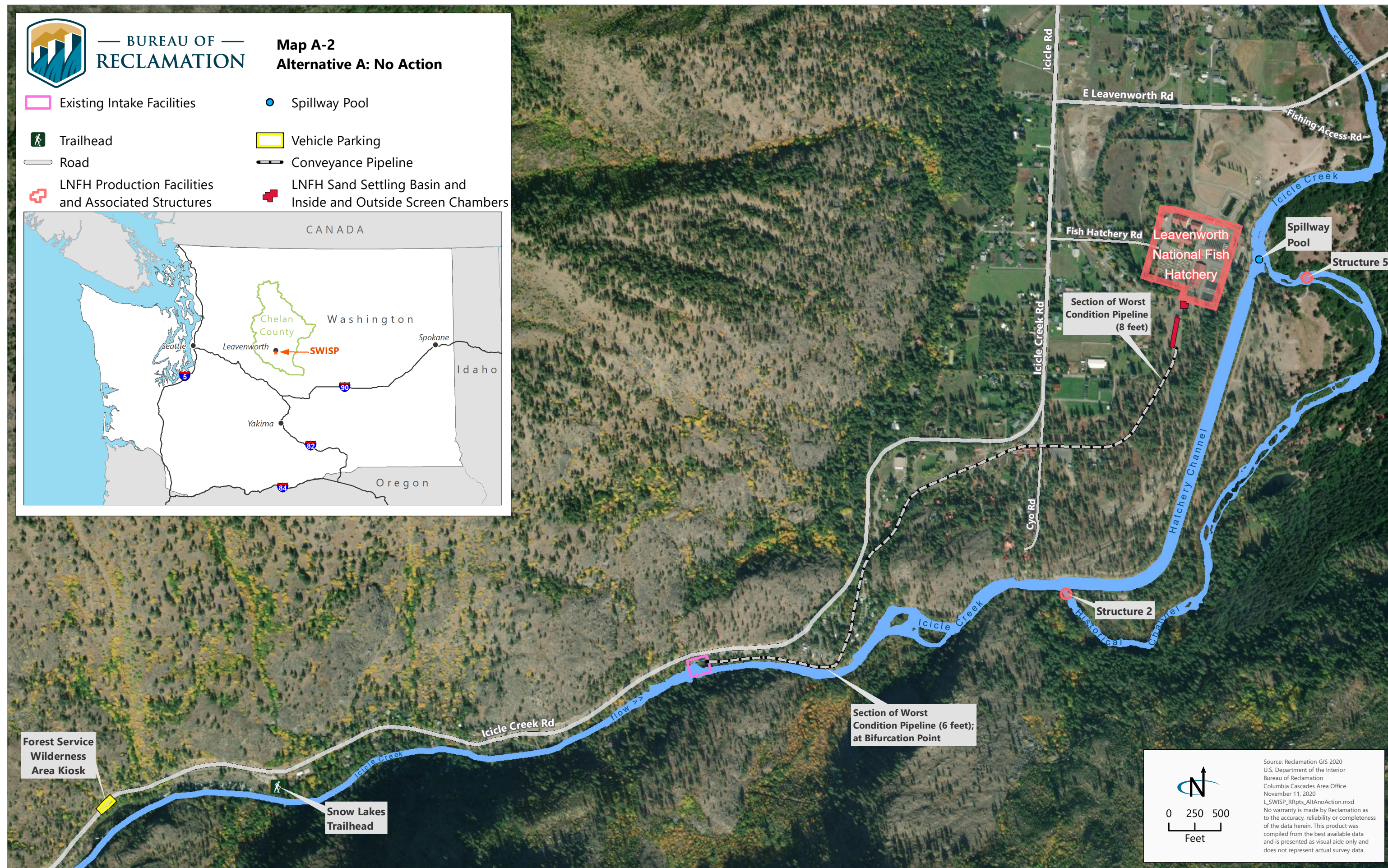




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Map A-2  
Alternative A: No Action

- Existing Intake Facilities
- Trailhead
- Road
- LNFH Production Facilities and Associated Structures
- Spillway Pool
- Vehicle Parking
- Conveyance Pipeline
- LNFH Sand Settling Basin and Inside and Outside Screen Chambers



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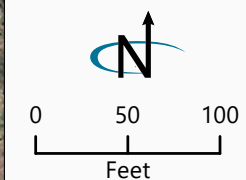
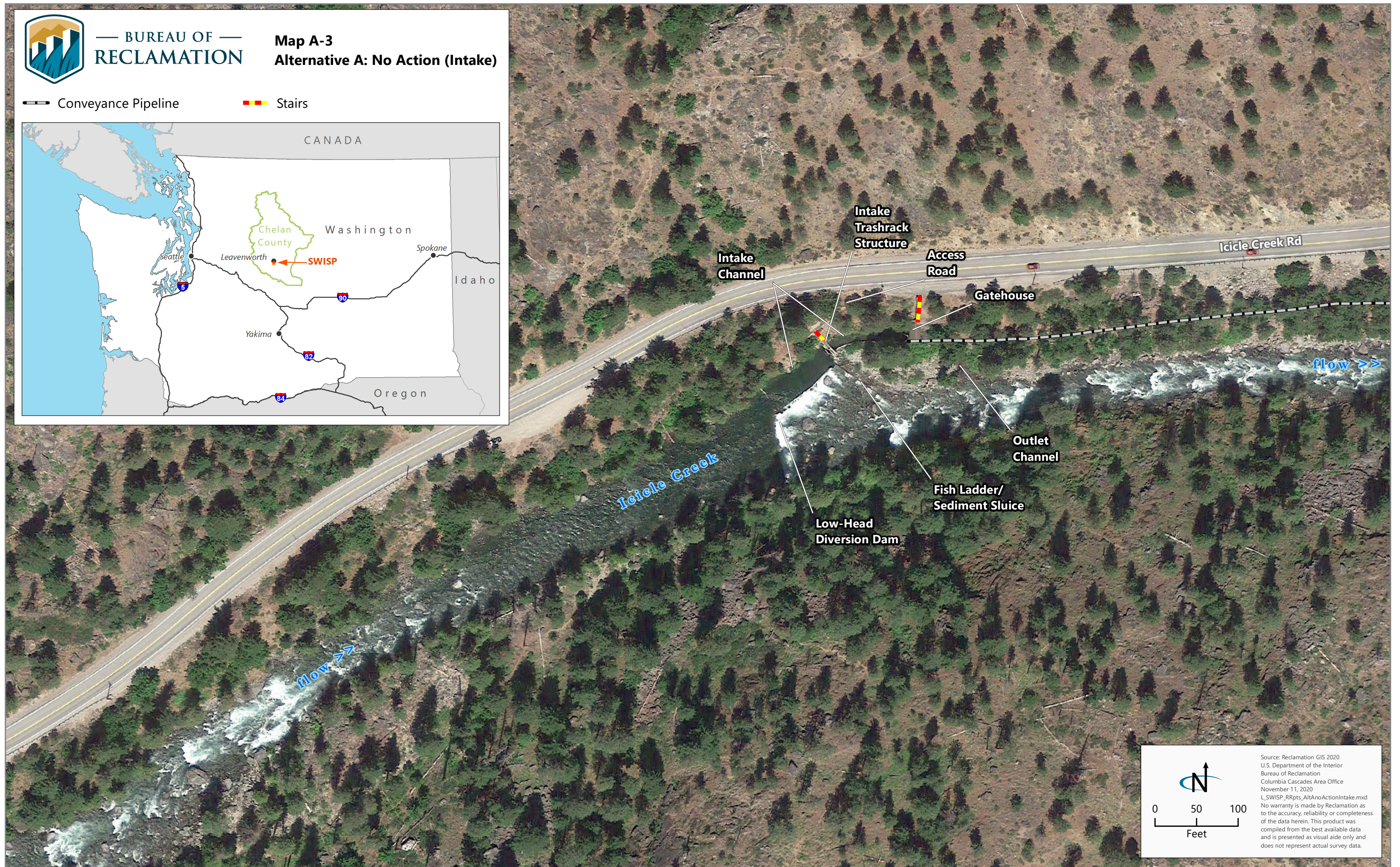


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Map A-3  
Alternative A: No Action (Intake)

Conveyance Pipeline

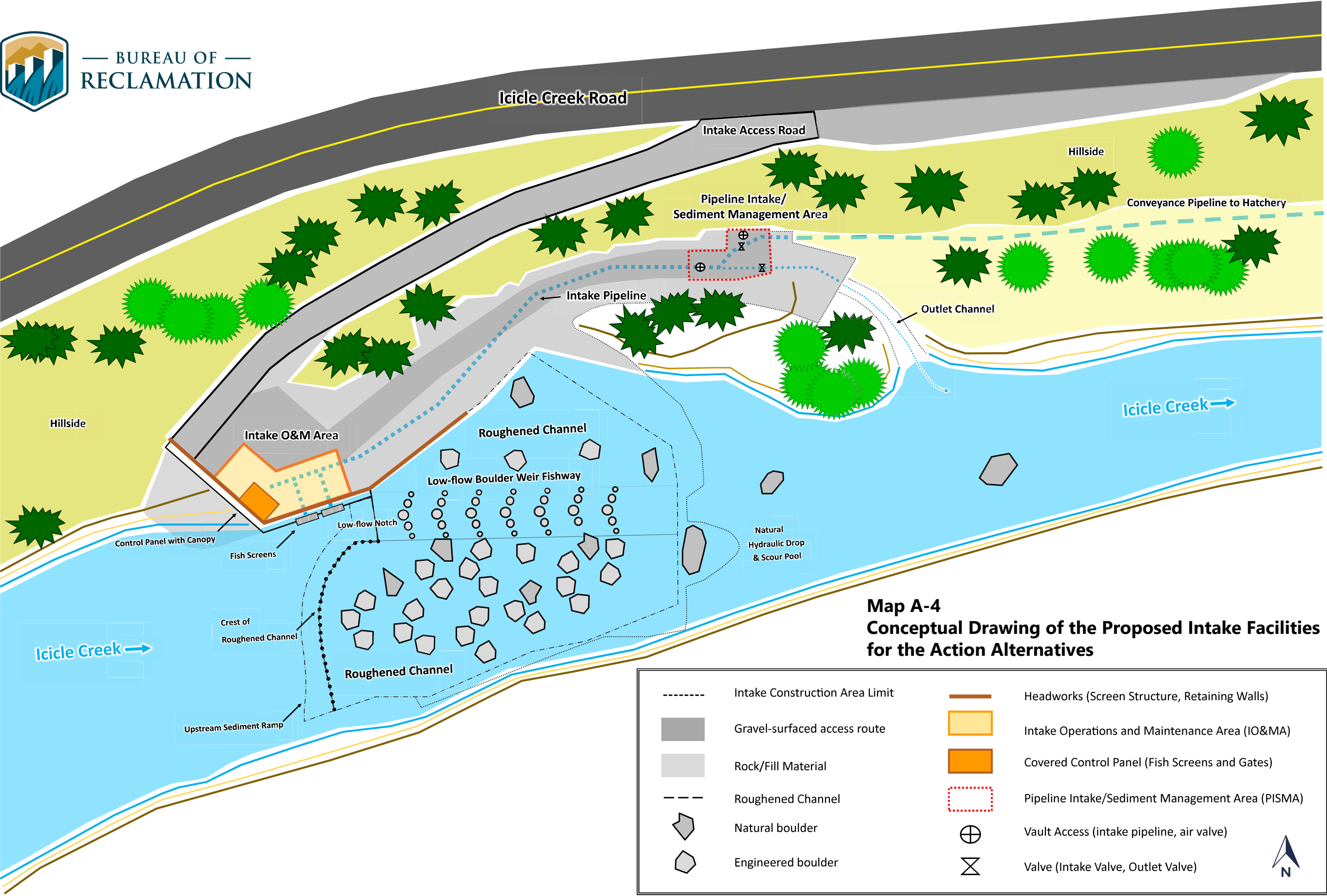
Stairs



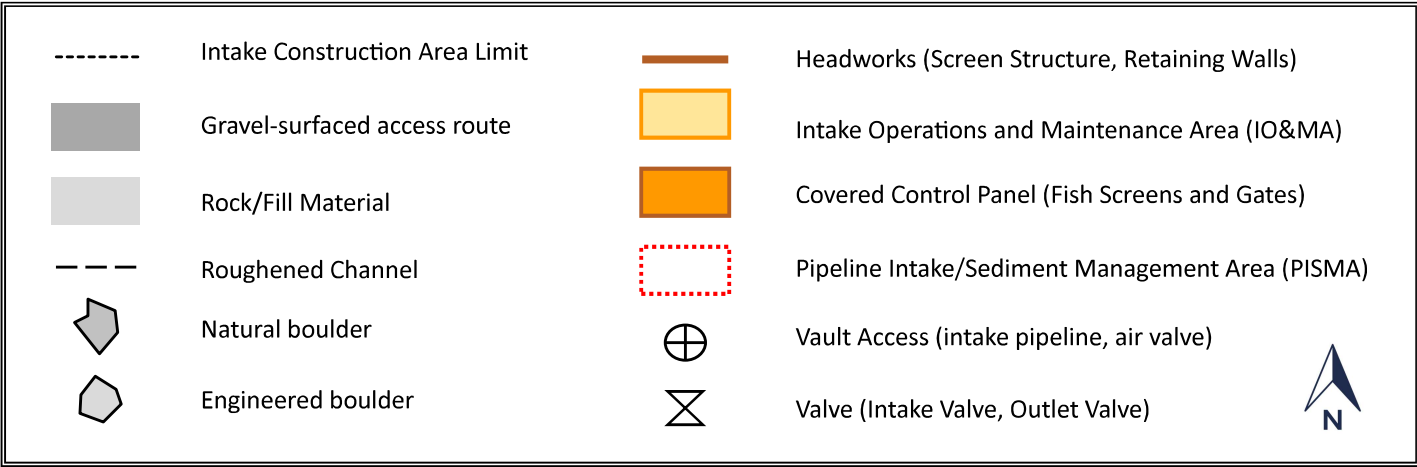
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Leavenworth National Fish Hatchery Surface Water Intake Fish Screens and Fish Passage (SWISP) Project



Map A-4  
Conceptual Drawing of the Proposed Intake Facilities  
for the Action Alternatives







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### Map A-5 Alternative B (Proposed Action) and Alternative D

#### Phase I

Intake Facilities

#### Phase II

Construction Area

Contractor Use Area  
(CUA)

Temporary Pump and Pipeline

Temporary Access Route

#### Phase I and II

Staging and Storage Site for  
Construction Equipment and Materials,  
and Construction Staff Administration

Road

Spillway Pool

Trailhead

Temporary Access Route

Conveyance Pipeline lined  
with Cure-in-Place Pipe  
(approximately 4,000 feet)

Pipeline Replacement

Access Routes

Construction Vehicle

Turnaround/ Vehicle Parking

LNFH Production Facilities  
and Associated Structures

LNFH Sand Settling Basin and  
Inside and Outside Screen Chambers

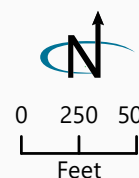


Forest Service  
Wilderness  
Area Kiosk

Snow Lakes  
Trailhead

Intake Facilities  
\*See Map 2-5 for  
Additional Details

Replacement Pipeline  
(Approx. 520 feet)



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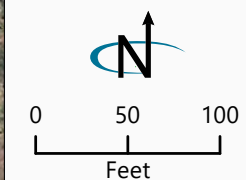
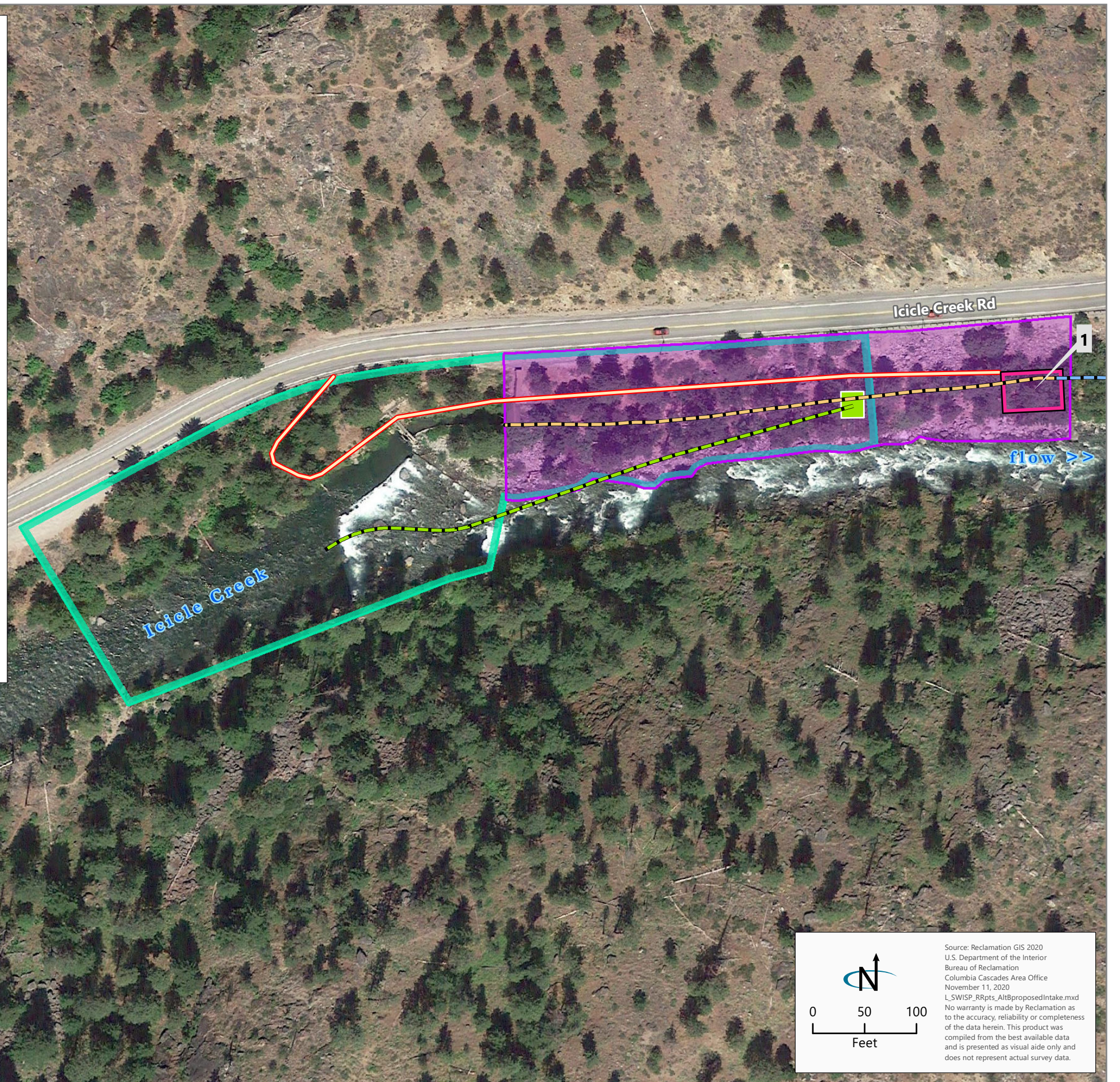
**Map A-6**  
**Alternative B (Proposed Action)**  
**and Alternative D: Intake**

Phase I

- Intake Facilities
- Gravity Bypass Outlet
- Gravity Bypass Pipeline
- Temporary Access Route

Phase II

- Conveyance Pipeline lined with Cure-in-Place Pipe
- Pipeline Replacement
- Construction Area
- Contractor Use Area (CUA)



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Map A-7  
Alternative C

Phase I

Intake Facilities

Phase II

Construction Area

Contractor Use Area  
(CUA)

Temporary Pump and Pipeline

Temporary Access Route

Phase I and II

Staging and Storage Site for  
Construction Equipment and Materials,  
and Construction Staff Administration

Road

Spillway Pool

Trailhead

Temporary Access Route

Conveyance Pipeline lined  
with Cure-in-Place Pipe  
(approximately 4,520 feet)

Pipeline Replacement

Access Routes

Construction Vehicle

Turnaround/ Vehicle Parking

LNFH Production Facilities  
and Associated Structures

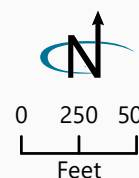
LNFH Sand Settling Basin and  
Inside and Outside Screen Chambers



Forest Service  
Wilderness  
Area Kiosk

Snow Lakes  
Trailhead

Intake Facilities  
\*See Map 2-7 for  
Additional Details



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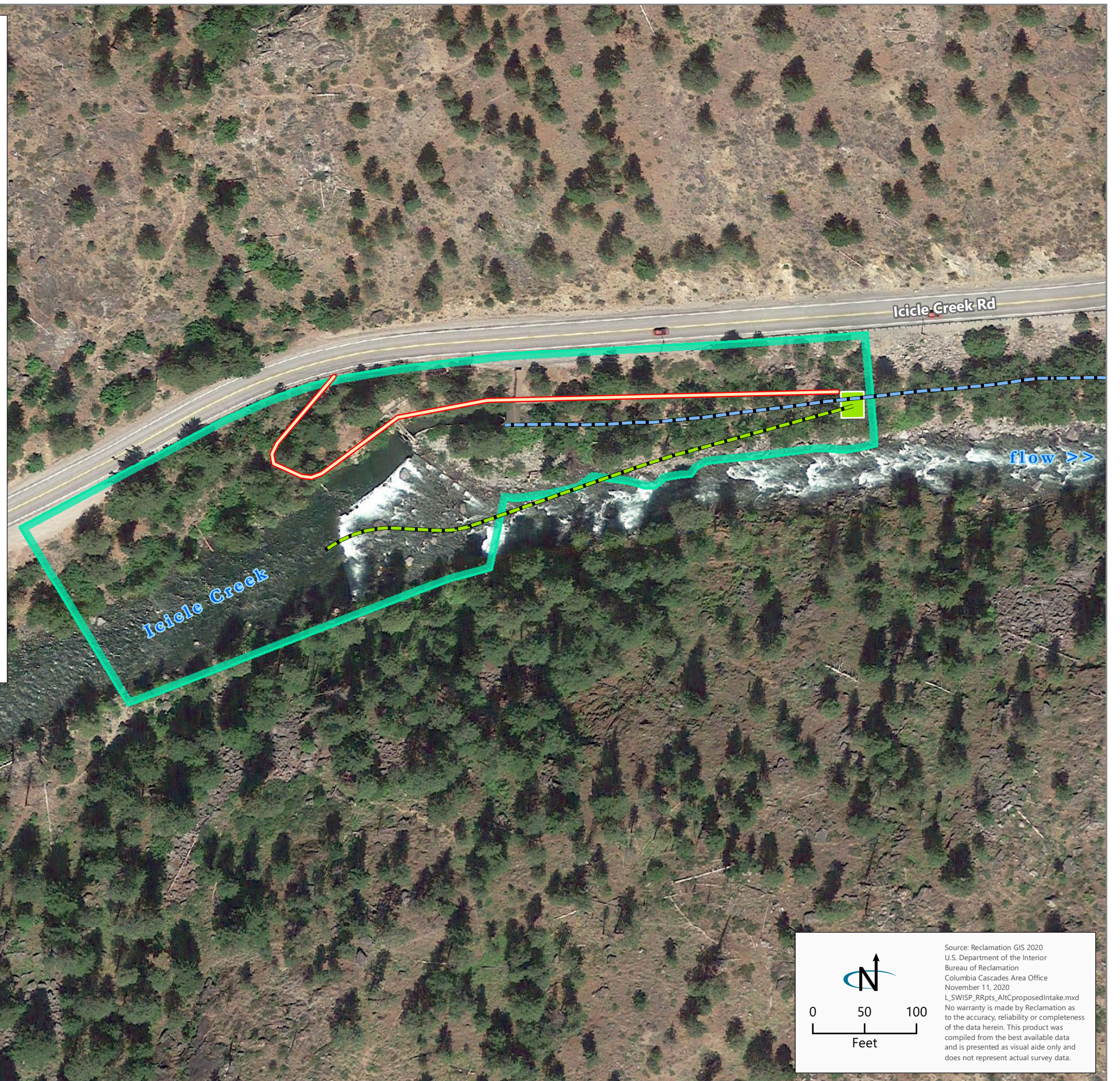
# Map A-8 Alternative C (Intake)

## Phase I

- Intake Facilities
- Gravity Bypass Outlet
- Gravity Bypass Pipeline
- Temporary Access Route

## Phase II

- Conveyance Pipeline lined with Cure-in-Place Pipe



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U.S. Department of the Interior  
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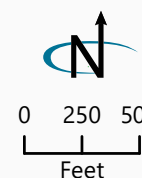
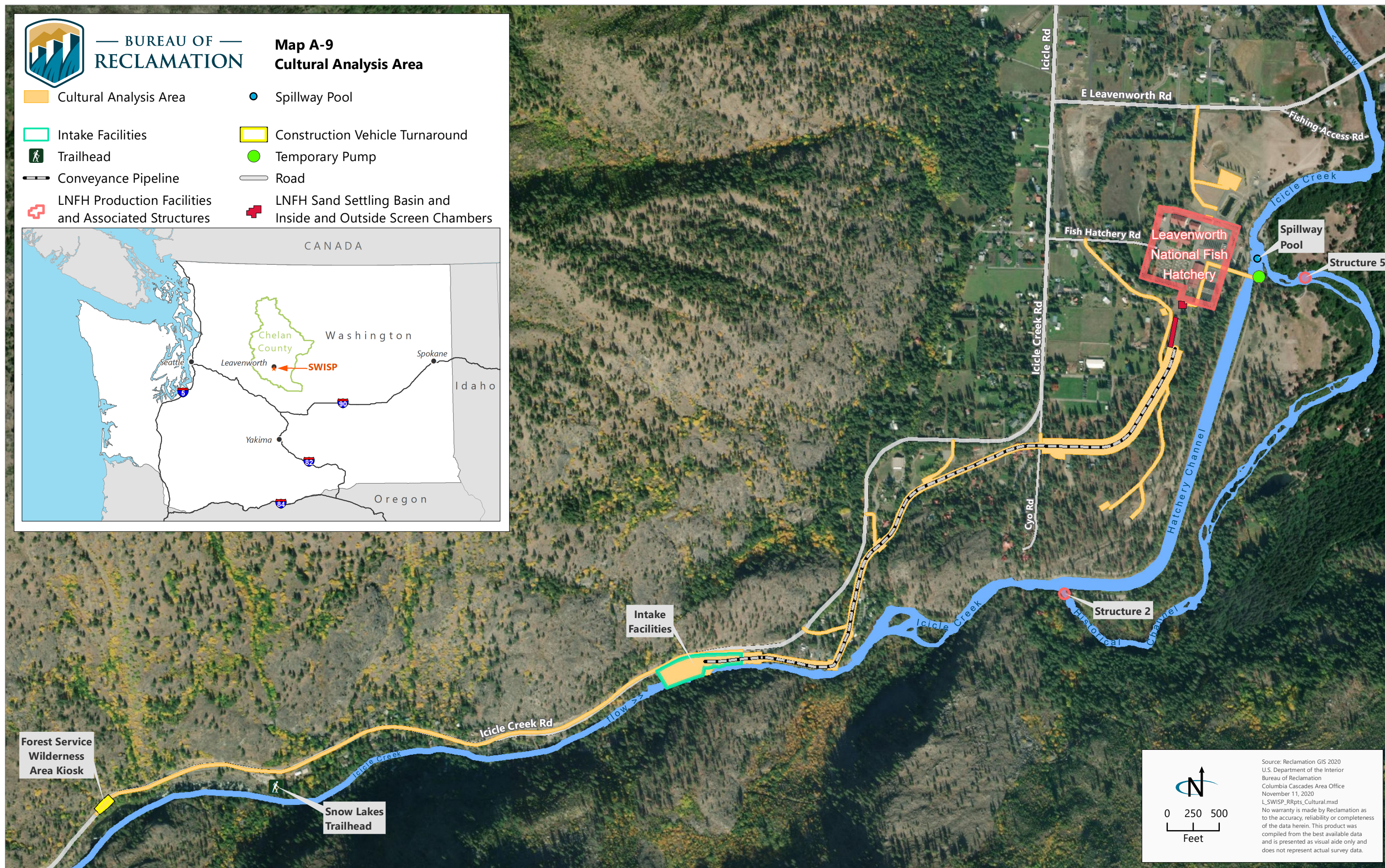




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### Map A-9 Cultural Analysis Area

- Cultural Analysis Area
- Intake Facilities
- Trailhead
- Conveyance Pipeline
- LNPH Production Facilities and Associated Structures
- Spillway Pool
- Construction Vehicle Turnaround
- Temporary Pump
- Road
- LNPH Sand Settling Basin and Inside and Outside Screen Chambers



Source: Reclamation GIS 2020  
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# **Appendix B**

## Best Management Practices

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# Appendix B. Best Management Practices

## B.1 Best Management Practices

To minimize impacts on resources from the Proposed Action, the Best Management Practices (BMPs) described in **Table B-1** would be implemented. BMPs are drawn from the following sources:

- Biological opinions for LNFH operations, issued by the USFWS (addressing threatened Bull Trout; USFWS 2011) and by the NMFS (addressing endangered spring Chinook Salmon and threatened Steelhead; NMFS 2015, NMFS 2017a).
- General Conservation Measures (GCMs) for ESA-listed salmonids in the programmatic biological opinion for USACE permitting of fish passage and restoration actions in Washington State (FPRPIII; NMFS 2017a).
- GCMs for Bull Trout and other ESA-listed salmonids in the programmatic biological opinion for the Washington State fish passage and habitat enhancement and restoration program (NMFS and USFWS 2008)<sup>1</sup>.
- Measures described in the construction specifications, including measures associated with site layout, temporary access, staging and stockpile areas, equipment use, erosion control, dust abatement, timing of in-water work and worksite isolation, and spill prevention and control.

Reclamation would also obtain required regulatory permits and implement terms and conditions contained therein. If permit requirements, BMPs, or other measures contradict each other, the contract specification requires that the contractor abide by the most stringent of requirements. A list of general, applicable permit conditions is included following **Table B-1**.

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<sup>1</sup> This combined agency programmatic biological opinion expired on December 31, 2013. The USACE and NMFS reinitiated consultation and NMFS has issued subsequent biological opinions for the nationwide permit program. However, the USACE has been operating under consultation extensions from USFWS, with the most recent extension expiring June 30, 2020. Reclamation anticipates that ESA Section 7 consultation with the USFWS for the SWISP Project will result in similar conservation measures as those contained in the expired programmatic biological opinion.

Table B-1. Best Management Practices

Resource Topic	Best Management Practice
General	<ul style="list-style-type: none"> <li>Heavy equipment use will be limited to that with the least adverse effects on the environment (e.g. minimally-sized, low ground pressure equipment, use of matting, etc.; NMFS 2017a).</li> <li>Conduct operations to prevent unnecessary destruction, scarring, or defacing of natural surroundings in the vicinity of the work.</li> </ul>
Air Quality and Climate	<ul style="list-style-type: none"> <li>Dust control and abatement measures will be implemented during construction.</li> <li>Vehicle traffic on unpaved surfaces would be limited to 10 miles per hour to minimize dust generation.</li> <li>Vehicle traffic on government rights-of-way, dirt roads, and paved roads through LNFH property would be limited to 10 miles per hour.</li> <li>Prevent, control, and abate dust pollution on government rights-of-way.</li> <li>Provide labor, equipment, and materials, and use efficient methods wherever and whenever required to prevent dust nuisance or damage to persons, property, or activities.</li> <li>Provide means for eliminating atmospheric discharges of dust during mixing, handling, and storing of cement, pozzolan, and concrete aggregate.</li> <li>Use reasonably available methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.</li> <li>Do not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.</li> </ul>
Geology and Soils	<ul style="list-style-type: none"> <li>The number of temporary access roads will be minimized, and roads will be designed to avoid adverse effects like creating excessive erosion (NMFS 2017a).</li> <li>Temporary roads and trails across slopes greater than 30 percent will be avoided when feasible (NMFS 2017a).</li> <li>Existing roadways or travel paths will be used whenever possible (NMFS 2017a).</li> </ul>
Water Resources (Stream Conditions)	<ul style="list-style-type: none"> <li>Coffer dam placement will maintain natural stream flow, minus the 40 cfs diversion to the hatchery, within the greatest amount of natural streambed width as possible.</li> <li>Additional flow outage shall require the prior written approval of the COR, and of appropriate Federal and State water quality control agencies.</li> </ul>

Resource Topic	Best Management Practice
Water Resources (Water Quality)	<p data-bbox="617 251 716 279"><b>General</b></p> <ul data-bbox="667 289 1890 527" style="list-style-type: none"> <li>• Perform construction activities by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources.</li> <li>• Measures shall be taken to ensure that no petroleum products, hydraulic fluid, fresh cement, sediments, sediment-laden water, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into waters of the U.S. (NMFS 2017a).</li> <li>• The use of acids for cleaning or preparing concrete surfaces for repair will not be permitted.</li> </ul> <p data-bbox="617 552 793 579"><b>In-water work</b></p> <ul data-bbox="667 589 1890 1317" style="list-style-type: none"> <li>• Prepare a Work Area Isolation Plan for all work below the bankfull elevation requiring flow diversion or isolation. Include the sequencing and schedule of dewatering and rewatering activities, plan view of all isolation elements, as well as a list of equipment and materials to adequately provide appropriate redundancy of all key plan functions (e.g., an operational, properly sized backup pump and/or generator) (NMFS 2017a).</li> <li>• Use of rapidly deployable prefabricated cofferdam systems would minimize impacts to subgrade and surrounding water.</li> <li>• When conducting in-water or bank work, machine hydraulic lines will be filled with vegetable oil for the duration of the Project to minimize impacts of potential spills and leaks.</li> <li>• Spill prevention and clean-up kits will be on site when heavy equipment is operating within 25 feet of the water (NMFS 2017a).</li> <li>• To the extent feasible, work requiring use of heavy equipment will be completed by working from the top of the bank (i.e. landward of the OHWM or extreme high tide line) (NMFS 2017a).</li> <li>• Equipment shall be checked daily for leaks and any necessary repairs shall be completed prior to commencing work activities around the water (NMFS 2017a).</li> <li>• Equipment will cross the stream in-water only under the following conditions: (NMFS 2017a). <ul data-bbox="716 1149 1858 1317" style="list-style-type: none"> <li>○ A. Equipment is free of external petroleum-based products, soil and debris has been removed from the drive mechanisms and undercarriage; and</li> <li>○ B. The substrate is bedrock or coarse rock and gravel; or</li> <li>○ C. Mats or logs are used in soft bottom situations to minimize compaction while driving across streams; and</li> </ul> </li> </ul>

Resource Topic	Best Management Practice
Water Resources (Water Quality, continued)	<ul style="list-style-type: none"> <li>○ D. Stream crossings will be performed at right angles (90 degrees) to the bank if possible; and</li> <li>○ E. No stream crossings will be performed at spawning sites when spawners of ESA listed fishes are present or eggs or juvenile fish could be in the gravel; and</li> <li>○ F. The number of crossings will be minimized.</li> <li>• Project operations will cease under high flow conditions that could inundate the Project Area, except as necessary to avoid or minimize resource damage (NMFS 2017a).</li> <li>• If high flow or high tide conditions that may cause siltation are encountered during the Project, work shall stop until the flow subsides or the tide falls (NMFS 2017a).</li> <li>• Where practicable, a turbidity and/or debris containment device shall be installed prior to commencing in-water work (NMFS 2017a).</li> <li>• When working in-water, some turbidity monitoring may be required, subject to the Corps permit requirements or CWA section 401 certification. Turbidity monitoring generally is required when working in streams with more than 40 percent fines (silt/clay) in the substrate. Turbidity will be monitored only when turbidity generating work takes place, for example, installation of coffer dams, pulling the culvert in-water, reintroducing water. The applicant will measure the duration and extent of the turbidity plume (visible turbidity above background) generated. The data will be submitted to the Corps, NMFS, and the USFWS immediately following Project construction. Turbidity measurements will be taken in NTUs and are used by project proponents to develop procedures to minimize turbidity and estimate take for future projects (NMFS 2017a).</li> <li>• Equipment used in the instream channel will have containment methods to address possible fuel and oil leaks.</li> </ul> <p><b>Erosion and spill prevention and control</b></p> <ul style="list-style-type: none"> <li>• A Temporary Erosion and Sediment Control plan and a Spill Prevention Control and Containment plan, commensurate with the size of the Project, must be prepared and carried out to prevent pollution caused by surveying or construction operations (NMFS 2017a).</li> <li>• A Spill Prevention, Control, and Clean-Up plan will be prepared prior to construction for every project that utilizes motorized equipment or vehicles (NMFS 2017a).</li> <li>• A spill prevention and countermeasures plan (SPCC) in accordance with 40 CFR, Part 112 is required where release of oil and oil products could reasonably be expected to enter into or upon navigable waters of the United States or adjoining shorelines in quantities that may be harmful (40 CFR, Part 110), and aggregate on site oil storage capacity is over 1,320 gallons. Only containers with capacity of 55 gallons and greater are included in determining on site aggregate storage capacity.</li> </ul>

Resource Topic	Best Management Practice
Water Resources (Water Quality, continued)	<p data-bbox="617 253 1255 279"><b>Erosion and spill prevention and control, continued</b></p> <ul style="list-style-type: none"> <li data-bbox="709 289 1570 315">○ Prevent, stop, and control spills or leaks during construction activities:</li> <li data-bbox="709 321 1075 347">○ Stop source of spill or leak.</li> <li data-bbox="709 354 1108 380">○ Stop migration of spill or leak.</li> <li data-bbox="709 386 1423 412">○ Place berm of sorbent material around perimeter of spill.</li> <li data-bbox="709 418 1045 444">○ Solidify free standing oil.</li> <li data-bbox="667 461 1885 526">• A supply of emergency erosion control materials will be on hand and temporary erosion controls will be installed and maintained in place until site restoration is complete (NMFS 2017a).</li> <li data-bbox="667 532 1885 672">• Landward erosion control methods shall be used to prevent silt-laden water from entering waters of the U.S. These may include, but are not limited to, filter fabric, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and/or immediate mulching of exposed areas (NMFS 2017a).</li> <li data-bbox="667 678 1856 769">• Control pollutants by use of sediment and erosion controls, wastewater and stormwater management controls, construction site management practices, and other controls including State and local control requirements.</li> <li data-bbox="667 776 1885 987">• Sediment and Erosion Controls: <ul style="list-style-type: none"> <li data-bbox="709 818 1822 915">○ Establish methods for controlling sediment and erosion which address vegetative practices, structural control, silt fences, straw dikes, sediment controls, and operator controls as appropriate.</li> <li data-bbox="709 922 1885 987">○ Institute stormwater management measures as required, including velocity dissipators, and solid waste controls which address controls for building materials and offsite tracking of sediment.</li> </ul> </li> <li data-bbox="667 993 1885 1263">• Pollution Prevention Measures: <ul style="list-style-type: none"> <li data-bbox="709 1029 1856 1127">○ Use methods of dewatering, unwatering, excavating, or stockpiling earth and rock materials which include prevention measures to control silting and erosion, and which will intercept and settle any runoff of sediment-laden waters.</li> <li data-bbox="709 1133 1885 1230">○ Prevent wastewater from general construction activities such as drainwater collection, aggregate processing, concrete batching, drilling, grouting, or other construction operations, from entering flowing or dry watercourses without the use of approved turbidity control methods.</li> <li data-bbox="709 1237 1604 1263">○ Divert stormwater runoff from upslope areas away from disturbed areas.</li> </ul> </li> </ul>

Resource Topic	Best Management Practice
Water Resources (Water Quality, continued)	<p data-bbox="617 250 1255 276"><b>Erosion and spill prevention and control, continued</b></p> <ul data-bbox="667 289 1877 915" style="list-style-type: none"> <li data-bbox="667 289 1877 630">• Turbidity Prevention Measures:               <ul data-bbox="718 321 1877 630" style="list-style-type: none"> <li data-bbox="718 321 1877 461">○ Use methods for prevention of excess turbidity which include, but are not restricted to, intercepting ditches, settling ponds, gravel filter entrapment dikes, flocculating processes, recirculation, combinations thereof, or other approved methods that are not harmful to aquatic life.</li> <li data-bbox="718 467 1877 526">○ Wastewaters discharged into surface waters shall meet conditions of Clean Water Act section 402, the National Pollutant Discharge Elimination System (NPDES) permit.</li> <li data-bbox="718 532 1877 630">○ Do not operate mechanized equipment in waterbodies without having first obtained a Clean Water Act section 404 permit, and then only as necessary to construct crossings or perform the required construction.</li> </ul> </li> <li data-bbox="667 636 1877 701">• Clean up spills or leaks in a manner that complies with applicable Federal, State, and local laws and regulations.</li> <li data-bbox="667 708 1877 915">• Dispose of spilled or leaked materials:               <ul data-bbox="718 740 1877 915" style="list-style-type: none"> <li data-bbox="718 740 1877 805">○ Handle and dispose of spilled or leaked materials contaminated with 50 ppm or greater polychlorinated biphenyls.</li> <li data-bbox="718 812 1877 915">○ Handle and dispose of spilled or leaked materials not contaminated or contaminated with less than 50 ppm polychlorinated biphenyls in accordance with applicable Federal, State, and local regulations.</li> </ul> </li> </ul> <p data-bbox="617 938 961 964"><b>Discharge water and wastes</b></p> <ul data-bbox="667 977 1877 1352" style="list-style-type: none"> <li data-bbox="667 977 1877 1107">• All discharge water created by construction (e.g. concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) will be treated to avoid negative water quality and quantity impacts. Removal of fines may be accomplished with bioswales; concrete washout water with an altered pH, may be infiltrated (NMFS 2017a).</li> <li data-bbox="667 1114 1877 1211">• Wastewater from Project activities and water removed from within the work area shall be routed to an upland disposal site (landward of the OHWM or extreme high tide line) to allow removal of fine sediment and other contaminants prior to being discharged to the waters of the U.S. (NMFS 2017a).</li> <li data-bbox="667 1218 1877 1352">• All waste material such as construction debris, silt, excess dirt or overburden resulting from the Project will generally be deposited above the limits of flood water in an upland disposal site. However, material from pushup dikes may be used to restore microtopography (e.g., filling drainage channels) (NMFS 2017a).</li> </ul>



Resource Topic	Best Management Practice
Water Resources (Water Quality, continued)	<p><b>Storage and staging</b></p> <ul style="list-style-type: none"> <li>• When not in use, vehicles and equipment containing oil, fuel, and/or chemicals will be stored in a staging area located at least 150 feet from the Corps' jurisdictional boundary of wetlands and waterbodies. If possible, staging will be located at least 300 feet away from the Corps' jurisdictional boundary of wetlands and waterbodies, and on impervious surfaces to prevent spills from reaching ground water. If moving equipment between the staging area and the worksite would create unacceptable levels of disturbance (for example, requiring multiple stream crossings, multiple passes over sensitive vegetation), a closer staging location with an adequate spill prevention plan may be proposed (NMFS 2017a).</li> <li>• Equipment will not be stored overnight in the instream channel.</li> <li>• Do not stockpile or deposit excavated materials or other construction materials, near or on, stream banks, lake shorelines, or other watercourse perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the watercourse.</li> <li>• Petroleum Product Storage Tanks Management. <ul style="list-style-type: none"> <li>○ Place oil or other petroleum product storage tanks at least 20 feet from streams, flowing or dry watercourses, lakes, wetlands, reservoirs, and any other water source.</li> <li>○ Do not use underground storage tanks.</li> <li>○ Construct storage area dikes at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to storage tank capacity located in the area plus sufficient freeboard to contain the 25-year rainstorm. Line diked areas with an impermeable barrier at least 50 mils thick.</li> <li>○ Areas for refueling operations: Lined with impermeable barrier at least 40 mils thick covered with 2 to 4 inches of soil.</li> </ul> </li> </ul> <p><b>Reclamation of temporary disturbance</b></p> <ul style="list-style-type: none"> <li>• All temporary access will be removed (including gravel surfaces) and planted after Project completion (NMFS 2017a).</li> <li>• Within 7 calendar days from Project completion, any disturbed bank and riparian areas shall be protected using native vegetation or other erosion control measures as appropriate. For erosion control, sterile grasses may be used in lieu of native seed mixes. Alternative methods (e.g. spreading timber harvest slash) may be used for erosion control if approved by the Corps (NMFS 2017a).</li> </ul>

Resource Topic	Best Management Practice
Water Resources (Water Rights)	<ul style="list-style-type: none"> <li>• A total of 40 cfs shall be continuously provided to the LNFH during Phase I construction.</li> <li>• A total of 20 cfs shall be continuously provided to the LNFH during Phase II construction activities taking place from April 17 to May 20.</li> </ul>
Biological Resources (Vegetation)	<ul style="list-style-type: none"> <li>• Preserve natural landscape and preserve and protect existing vegetation not required or otherwise authorized to be removed.</li> <li>• Protect vegetation from damage or injury caused by construction operations, personnel, or equipment by the use of protective barriers or other approved methods.</li> <li>• Minimize, to the greatest extent practicable, clearings and cuts through vegetation.</li> <li>• Do not use trees for anchorages except in emergency cases or as approved by Reclamation. Where approved, wrap the trunk with a sufficient thickness of approved protective material before rope, cable, or wire is placed.</li> <li>• Use safety ropes where tree climbing is necessary; do not use climbing spurs.</li> <li>• Before bringing construction equipment on site, clean it to remove dirt, vegetation, and other organic material to prevent introduction of noxious weeds, and invasive plant and animal species.</li> <li>• Contractor cleaning procedures shall result in equipment being cleaned as well or better than the procedures described in Reclamation Cleaning Manual (Reclamation 2010). Reclamation will inspect construction equipment following procedures described in Reclamation Cleaning Manual before allowing the equipment onsite.</li> <li>• Restore contractor use areas to pre-construction condition.</li> <li>• Areas of temporary disturbance must be re-seeded according to a revegetation plan.</li> </ul>

Resource Topic	Best Management Practice
Biological Resources (Fisheries and Aquatic Ecosystems)	<p data-bbox="617 250 793 276"><b>Riparian areas</b></p> <ul data-bbox="667 289 1892 915" style="list-style-type: none"> <li data-bbox="667 289 1625 315">• The removal of riparian vegetation for access will be minimized (NMFS 2017a).</li> <li data-bbox="667 321 1829 386">• All native, non-invasive organic material (large and small wood) cleared from the action area for access will remain on site (NMFS 2017a).</li> <li data-bbox="667 393 1877 457">• Boundaries of clearing limits associated with site access and construction will be marked to avoid or minimize disturbance of riparian vegetation, wetlands, and other sensitive sites (NMFS 2017a).</li> <li data-bbox="667 464 1892 737">• If native riparian vegetation is disturbed it will be replanted with native herbaceous and/or woody vegetation after Project completion. Planting will be completed between October 1 and April 15 of the year following construction. Plantings will be maintained as necessary for 3 years to ensure 50 percent herbaceous and/or 70 percent woody cover in year 3, whatever is applicable. For riparian impact areas greater than 0.5 of an acre, a final monitoring report will be submitted to the Corps in year 3. Failure to achieve the 50 percent herbaceous and 70 percent woody cover in year 3 will require the permittee to submit a plan with contingency measures to achieve standards or reasons to modify standards (NMFS 2017a).</li> <li data-bbox="667 743 1864 808">• Per NWP 27, post-planting monitoring may be required for up to 10 years in order to ensure an 80 percent planting survival rate is met.</li> <li data-bbox="667 815 1871 915">• Fencing will be installed as necessary to prevent access to revegetated sites by livestock, beavers or unauthorized persons. Beaver fencing will be installed around individual plants where necessary (NMFS 2017a).</li> </ul>

Resource Topic	Best Management Practice
Biological Resources (Fisheries and Aquatic Ecosystems, continued)	<p data-bbox="617 269 978 295"><b>Fisheries and aquatic wildlife</b></p> <ul data-bbox="667 305 1890 1284" style="list-style-type: none"> <li data-bbox="667 305 1367 331">• Instream work is limited to July 1 through November 15.</li> <li data-bbox="667 337 1890 578">• A minimum depth of 0.8 ft shall be maintained within the greatest amount of the natural stream channel width at all times with placement of cofferdams to facilitate fish passage. Fish passage criteria in Icicle Creek Fish Passage Evaluation for the Leavenworth National Fish Hatchery (Anglin et al. 2013, p. 26-28) should be consulted for minimum depth and maximum velocity criteria. The maximum velocity criteria on pages 26-28 are conservative, but attempts should be made to provide fish passage to the greatest extent practical across the natural stream channel width and hydrograph.</li> <li data-bbox="667 584 1890 753">• Work site dewatering will follow the Dewatering and Fish Capture Protocol in Appendix D (NMFS and USFWS 2008). Fish removal from dewatered work sites would be overseen by a fisheries biologist. Electrofishing for fish relocation/work area isolation must follow the most recent NMFS guidelines (NMFS 2017a). Record all incidents of listed fish being observed, captured, handled, and released (USFWS 2011).</li> <li data-bbox="667 760 1797 824">• Re-watering of the construction site occurs at such a rate as to minimize loss of surface water downstream as the construction site streambed absorbs water (NMFS and USFWS 2008).</li> <li data-bbox="667 831 1850 896">• The design of passage structures will follow the appropriate design standards in the most current version of the NMFS Anadromous Salmonid Fish Facility Design manual (NMFS and USFWS 2008).</li> <li data-bbox="667 902 1829 967">• Roughened channels will be designed to standards contained in the most current version of the NMFS Anadromous Salmonid Fish Facility Design manual (NMFS and USFWS 2008).</li> <li data-bbox="667 974 1797 1000">• Post-construction monitoring of the low-flow fishway would be done to ensure effectiveness.</li> <li data-bbox="667 1006 1890 1143">• Boulder weirs will be low in relation to channel dimensions so that they are completely overtopped during channel-forming, bankfull flow events. Boulder weirs will be placed diagonally across the channel or in more traditional upstream pointing "V" or "U" configurations with the apex oriented upstream (NMFS and USFWS 2008).</li> <li data-bbox="667 1149 1881 1214">• Boulder weirs will be constructed to allow upstream and downstream passage of all native listed fish species and life stages that occur in the stream at all flows (NMFS and USFWS 2008).</li> <li data-bbox="667 1221 1839 1284">• Boulder weirs shall be designed and inspected by a multidisciplinary team (including a salmon or trout biologist) that has experience with these types of structures (NMFS and USFWS 2008).</li> </ul>

Resource Topic	Best Management Practice
Biological Resources (Fisheries and Aquatic Ecosystems, continued)	<ul style="list-style-type: none"><li>• Screens, including screens installed in temporary pump intakes, will be designed to meet standards in the most current version of the NMFS Anadromous Salmonid Passage Facility Design manual (NMFS and USFWS 2008).</li><li>• Pumps used to dewater the work isolation area or supply temporary hatchery water during construction, will have a fish screen installed, operated and maintained according to NMFS' fish screen criteria (NMFS 2017a).</li><li>• All fish screens will be sized to match the water users documented or estimated historic water use or legal water right, whichever is less. Water diversion rates shall not exceed the design capacity of the screen, as calculated by following NMFS Anadromous Salmonid Passage Facility Design manual (NMFS and USFWS 2008).</li><li>• Irrigation diversion intake and return points will be designed (to the greatest degree possible) to prevent all native fish life stages from swimming or being entrained into the irrigation system (NMFS and USFWS 2008).</li><li>• Do not use jackhammers in excess of 30 pounds without Reclamation approval. Blasting is not permitted.</li><li>• Monitor, capture, and release listed fish species in the sand settling basin in accordance with applicable protocol in NMFS (2017a), USFWS (2011), and as identified through consultation for the Project's Biological Assessment.</li><li>• Schedule annual intake maintenance to avoid the Bull Trout upstream migration period (USFWS 2011).</li><li>• Disturbing natural-origin spawning salmon and Steelhead during hatchery maintenance activities of diversions and instream structures shall be avoided, as shall disturbing salmon and Steelhead redds (NMFS 2017b).</li></ul>

Resource Topic	Best Management Practice
Biological Resources (Terrestrial Wildlife)	<ul style="list-style-type: none"> <li>• Schedule all necessary vegetation removal, trimming, and grading of vegetated areas outside of the bird breeding season (generally March 1 to August 31) to the maximum extent practicable.</li> <li>• Avoid construction activities during the bird breeding season to the extent practicable. When Project activities cannot occur outside the bird nesting season (March 1 to August 31), conduct surveys prior to scheduled activity to determine if active nests are present within the Wildlife Analysis Area and buffer any active nesting locations found during surveys. Surveys should be conducted by a qualified biologist no more than seven days prior to disturbance activities. If active nests are detected during these surveys a no-activity buffer zone around the nest will be established by a qualified biologist based on species, Project disturbance level, topography, existing disturbance levels, and habitat type until fledging has occurred. During ongoing Project activities if a bird establishes a new nest the nest vegetation will not be removed or modified but no buffer zone will be required. If there is a pause in Project activities greater than seven days an additional nesting bird survey would be needed.</li> <li>• Reclamation would minimize the highest construction noise disturbance to avoid or minimize impacts on mule deer and mountain goat during sensitive periods to the extent practicable. This is between mid-spring to early fall (May 1-September 30).</li> </ul>
Cultural Resources	<ul style="list-style-type: none"> <li>• As required by the Washington State Historic Preservation Officer, the <i>Plan and Procedures for the Inadvertent Discovery of Cultural Resources and Human Remains</i> (Inadvertent Discovery Plan) will be followed in the case of inadvertent discovery of cultural resources or human remains during construction.</li> <li>• A professional archaeological monitor will be present during ground-disturbing activities.</li> </ul>
Land Use	<ul style="list-style-type: none"> <li>• Restore contractor use areas to pre-construction condition.</li> </ul>

Resource Topic	Best Management Practice
Transportation	<ul style="list-style-type: none"> <li>• Perform work on rights-of-way established by the government as necessary to construct and maintain any roads, bridges, or drainage structures required for establishment and use of haul routes for construction operations.</li> <li>• Use existing available public highways, roads, or bridges as haul routes subject to applicable local regulations.</li> <li>• Minimize interference with or congestion of local traffic.</li> <li>• Provide barricades, flaggers, and other necessary precautions for safety of the public where haul routes cross public highways or roads.</li> <li>• Maintain roadways, parking areas, and haul routes in a sound, smooth condition.</li> <li>• Promptly repair ruts, broken pavement, potholes, low areas with standing water, and other deficiencies to maintain road surfacing and drainage in original or specified condition.</li> <li>• Meet requirements of the Manual on Uniform Traffic Control Devices for Streets and Highways, Part 6 (Temporary traffic control; <a href="https://mutcd.fhwa.dot.gov/">https://mutcd.fhwa.dot.gov/</a>) and WAC 296-155-305 (Signaling and flaggers).</li> <li>• Provide cones, delineators, concrete safety barriers, barricades, flasher lights, danger signals, signs, and other temporary traffic control devices as required to protect work and public safety.</li> <li>• Provide flaggers and guards as required to prevent accidents and damage or injury to passing traffic.</li> <li>• Do not begin work along public or private roads until traffic control devices for warning, channeling, and protecting motorists are in place in accordance with approved traffic control plan.</li> <li>• Provide unobstructed, smooth, and dustless passageway for one lane of traffic through construction operations except at times when vehicles will be turning around at the USFS kiosk or backing onto the Intake Access Road.</li> <li>• Provide unobstructed, smooth, and dustless passageway for one lane of traffic through construction operations.</li> <li>• Maintain convenient access to driveways and buildings along line of work.</li> <li>• Protect roads closed to traffic with effective barricades and warning signs. Illuminate barricades and obstructions from sunset to sunrise.</li> <li>• Remove traffic control devices when no longer needed.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Do not use jackhammers in excess of 30 pounds without Reclamation approval. Blasting is not permitted.</li> </ul>
Recreation	<ul style="list-style-type: none"> <li>• There are no construction activities (such as parking, storage, or vehicle turnaround) allowed in the Forest Service Snow Lakes Trailhead parking lot.</li> </ul>

Resource Topic	Best Management Practice
Visual Resources	<ul style="list-style-type: none"> <li>Minimize, to the greatest extent practicable, clearings and cuts through vegetation. Irregularly shape authorized clearings and cuts to soften undesirable aesthetic impacts.</li> </ul>
Socioeconomics and Environmental Justice	<ul style="list-style-type: none"> <li>Reclamation policy is to avoid impacts on Indian sacred sites whenever possible. Continued coordination with affected Tribes may result in future identification of sacred sites. If this occurs, Reclamation would further evaluate impacts on these resources. Consultation with the Yakama Nation and Confederated Tribes of the Colville Reservation would identify how to protect sacred sites if they were identified and how to provide continued access if any such sites were affected by Project construction.</li> <li>In-water work would not occur in the spillway pool during the Tribal fishing preparations or season.</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>A locate for underground utilities would be coordinated with the Washington Utility Notification Center (<a href="http://www.callbeforeyoudig.org/washington/index.asp">http://www.callbeforeyoudig.org/washington/index.asp</a>) prior to construction.</li> </ul>
Hazardous Materials and Public Health and Safety	<ul style="list-style-type: none"> <li>Vehicle traffic on government rights-of-way, dirt roads, and paved roads through LNFH property would be limited to 10 miles per hour.</li> <li>Nuisance flows from seepage and leakage through the cofferdams will be managed to maintain a safe working environment.</li> <li>Hazardous Waste Disposal: <ul style="list-style-type: none"> <li>Dispose by removal from jobsite.</li> <li>Recycle hazardous waste whenever possible.</li> <li>Dispose of hazardous waste materials that are not recycled at appropriately permitted treatment or disposal facilities.</li> <li>Transport hazardous waste in accordance with 49 CFR 171-179.</li> </ul> </li> <li>Provide protection for personnel and existing facilities from harm due to demolition activities.</li> <li>Arrange protective installations to permit operation of existing equipment and facilities by the government while work is in progress.</li> <li>Inadvertent discovery of hazardous wastes or materials will be reported to Reclamation and Ecology within 24 hours of discovery. Construction in the vicinity of the discovery would cease until the appropriate disposal procedures were identified and carried out in coordination with Reclamation and Ecology.</li> </ul>



Resource Topic	Best Management Practice
Tribal Interests	<ul style="list-style-type: none"><li>• Reclamation policy is to avoid impacts on Indian sacred sites whenever possible. Continued coordination with affected Tribes may result in future identification of sacred sites. If this occurs, Reclamation would further evaluate impacts on these resources. Consultation with the Yakama Nation and Confederated Tribes of the Colville Reservation would identify how to protect sacred sites if they were identified and how to provide continued access if any such sites were affected by Project construction.</li></ul>

Sources: As noted in table.

## **B.2 Regulatory Permit Terms and Conditions**

Reclamation will obtain required regulatory permits and comply with the general, regional, and permit-specific terms and conditions contained therein. A general list of anticipated terms and conditions is included below. Regulating agencies may also impose additional conditions on a project-by-project basis.

### **B.1.1 U.S. Army Corps of Engineers Section 404 Nationwide Permits**

#### ***USACE General Conditions for all NWP***

- **Aquatic Life Movements.** All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.
- **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable.
- **Suitable Material.** Material used for construction or discharged must be free from toxic pollutants in toxic amounts.
- **Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.
- **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.
- **Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.
- **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.
- **Tribal Rights.** No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.
- **Endangered Species.** (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed.
- **Endangered Species.** (d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

- Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.
- Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.
- Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed.
- Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)).
- Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification.

***USACE Seattle District NWP Regional Conditions***

- Construction Boundaries: Permittees must clearly mark all construction area boundaries before beginning work on projects that involve grading or placement of fill. Boundary markers and/or construction fencing must be maintained and clearly visible for the duration of construction. Permittees should avoid and minimize removal of native vegetation (including submerged aquatic vegetation) to the maximum extent possible.
- Temporary Impacts and Site Restoration: Native soils removed from waters of the U.S. for project construction should be stockpiled and used for site restoration. Restoration of temporarily disturbed areas must include returning the area to pre-project ground surface contours. If native soil is not available from the project site for restoration, suitable clean soil of the same textural class may be used. The permittee must revegetate disturbed areas with native plant species sufficient in number, spacing, and diversity to restore affected functions. Revegetation must begin as soon as site conditions allow within the same growing season as the disturbance. Temporary erosion and sediment control measures must be removed as soon as the area has established vegetation sufficient to control erosion and sediment.

***NWP 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities) Conditions***

- Only native plant species should be planted at the site.

***NWP 33 (Temporary Construction, Access, and Dewatering) Conditions***

- Appropriate measures must be taken to maintain near normal downstream flows and to minimize flooding.
- Fill must consist of materials, and be placed in a manner, that will not be eroded by expected high flows.

- The use of dredged material may be allowed if the district engineer determines that it will not cause more than minimal adverse environmental effects. Following completion of construction, temporary fill must be entirely removed to an area that has no waters of the United States, dredged material must be returned to its original location, and the affected areas must be restored to pre-construction elevations. The affected areas must also be revegetated, as appropriate.

### **B.1.2 Ecology Section 401 Water Quality Certification**

#### ***General Conditions***

- Stormwater pollution prevention: All projects that involve land disturbance or impervious surfaces must implement stormwater pollution prevention or control measures to avoid discharge of pollutants in stormwater runoff to waters of the State.
  - For land disturbances during construction, the applicant must obtain and implement permits (e.g., Construction Stormwater General Permit) where required and follow Ecology's current stormwater manual.
  - Following construction, prevention or treatment of on-going stormwater runoff from impervious surfaces shall be provided.

### **B.3 Potential Contractor Plan Submittals**

The list of plans that would need to be prepared before Project construction could begin may include, but are not limited to the following:

- Land Use and Landscape Rehabilitation Plan
- Traffic Control Plan
- Pollution Prevention Plan
- Spill Prevention, Control, and Countermeasure Plan
- Tree and Plant Protection Plan
- Waste Production and Disposal Plan
- Waste Handling and Disposal Plan
- Demolition Plan
- Concrete Removal and Disposal Plan
- Water Control Plan
- Cofferdam Construction Plan
- Seeding Plan
- Work Area Isolation Plan
- Temporary Erosion and Sediment Control Plan
- Inadvertent Discovery Plan

## B.4 References

- Anglin, D. R., J. J. Skalicky, D. Hines, and N. Jones. 2013. Icicle Creek Fish Passage Evaluation for The Leavenworth National Fish Hatchery. U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, Washington.
- NMFS (National Marine Fisheries Service). 2015. Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Consultation; Leavenworth National Fish Hatchery spring Chinook Salmon Program. National Marine Fisheries Service, West Coast Region, Portland, Oregon.
- \_\_\_\_\_. 2017a. Programmatic Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Seattle District Corps of Engineers Permitting of Fish Passage and Restoration Action in Washington State (FPRP III). West Coast Region, Portland, Oregon.
- \_\_\_\_\_. 2017b. Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Consultation, Leavenworth National Fish Hatchery Spring Chinook Salmon Program (Reinitiation 2016). National Marine Fisheries Service, West Coast Region, Portland, Oregon.
- NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2008. Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Washington State Fish Passage and Habitat Enhancement Restoration Programmatic. NMFS Tracking No. 2008/03598, USFWS No. 13410-2008-FWS#F-0209. Lacey, Washington.
- Reclamation (U.S. Bureau of Reclamation). 2010. Technical Memorandum No. 86-68220-07-05: Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species, 2010 Edition. Denver, Colorado.
- USFWS (U.S. Fish and Wildlife Service). 2011. Biological Opinion for the operations and maintenance (O&M) of the LNFH and effects on the threatened bull trout (*Salvelinus confluentus*) and its designated critical habitat. USFWS Reference No. 13260-2011-F-0048 and 13260-2011-P-0002. Wenatchee, Washington.

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