

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Albeni Falls Dam Project Master Plan

NEPA ID Number: EAXX-202-GP3-1734361845

Bonner County, Idaho

The U.S. Army Corps of Engineers, Seattle District (USACE) has begun an environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. The draft Environmental Assessment (EA) dated 26 January 2026, for the Albeni Falls Dam (AFD) Project Master Plan addresses proposed updates to the Natural Resource Management Master Plan for the Albeni Falls Dam Project in Bonner County, Idaho.

The Draft EA, incorporated herein by reference, evaluated various alternatives to accommodate development and operational needs for AFD land management. One Federal action requiring NEPA compliance is analyzed in the EA summarized below.

Proposed Action: The preferred alternative is the adoption of an updated Master Plan. The updated Master Plan updates and modifies the organizational structure of management units, broadened focus of wildlife habitat management, treatment of invasive species, and expected operations and maintenance actions.

Alternatives: In addition to a “no action” plan, one alternative was evaluated. The alternatives included a no action alternative and an updated Master Plan alternative (Draft EA Section 2). For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Proposed Action

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Air quality and Greenhouse Gas Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historic Properties and Historic Properties of Religious and Cultural Significance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Precontact and Historic Archaeological Sites	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Land use, Utilities, and Infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Socioeconomics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Geology and Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Groundwater	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tribal trust resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Impact Minimization: All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the EA will be implemented, if appropriate, to minimize impacts. The BMPs are listed in Attachment A, Appendix D in the updated plan proposed action.

Mitigation: No compensatory mitigation is required as part of the proposed action.

Public Review: USACE invites submission of comments on the environmental impact of the proposed action as outlined in the Draft EA/FONSI. USACE will consider all submissions received during the comment period. The nature or scope of the proposal may be changed upon consideration of the comments received. If significant effects on the quality of the human environment are identified and cannot be mitigated, USACE would initiate an Environmental Impact Statement (EIS) and afford all the appropriate public participation opportunities attendant to an EIS.

Treaty Tribes: Four Native American Tribes have significant historic and contemporary interest in the resources in the project area: the Kalispel Tribe of Indians, Confederated Salish and Kootenai Tribes of the Flathead Reservation, Kootenai Tribe of Idaho, and Coeur d'Alene Tribe of Indians. A notice requesting attendance to a public meeting and commentary for the updated Master Plan on June 7, 2024, which was held from June 24-25, 2024. A notice that the EA would be posted for public comment was sent to the Tribes on December 31, 2024 and January 2, 2025. To date, USACE has not received comments from any of the contacted Tribes.

Compliance:

a. Endangered Species Act:

The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) are responsible for the Endangered Species Act of 1973 (ESA). USACE previously evaluated potential effects to endangered species in Biological Assessments (BA) in 2018 and 2023 and determined the proposed action would not change those effect determinations. Any proposed routine O&M, small scale action, or construction of in-water or below the ordinary high water mark work would be limited in scope in accordance with the USFWS' 2019 Standard Local Operating Procedures for Endangered Species (SLOPES) Biological Opinion. If a specific project does not meet the limitations or guidelines in SLOPES, then that project would be analyzed and separate Section 7 consultation will be completed prior to construction, as necessary.

Species	Species Effect Determination	Critical Habitat Determination
<i>Bull Trout</i> <i>Salvelinus confluentus</i>	NLAA	NLAA
<i>Canada Lynx</i> <i>Lynx canadensis</i>	No Effect	No Effect
<i>Grizzly Bear</i> <i>Ursus arctos horribilis</i>	No Effect	No Effect
<i>North American Wolverine</i> <i>Gulo gulo luscus</i>	No Effect	N/A
<i>Yellow-billed Cuckoo</i> <i>Coccyzus americanus</i>	No Effect	No Effect
<i>Whitebark Pine</i> <i>Pinus albicaulis</i>	No Effect	N/A
<i>Monarch Butterfly</i> <i>Danaus plexippus</i>	No Effect	N/A

b. Clean Water Act:

USACE anticipates that periodic bank stabilization and repair measures along the shoreline are expected to meet the requirements of the CWA Section 404(f)(1)(B) exemption or Nationwide Permit (NWP) 3 and the associated general Idaho Department of Environmental Quality (IDEQ) Water Quality Certificate (WQC). If those requirements cannot be met, compliance will be achieved via other pathways (e.g., NWP 13) and may require a WQC from IDEQ.

c. National Historic Preservation Act:

Albeni Falls Dam is part of the Federal Columbia River Power System (FCRPS) and is subject to the requirements of Sections 106 and 110 of the National Historic Preservation Act (NHPA). Historic Properties at AFD are also managed in accordance with the *Systemwide Programmatic Agreement for the Management of Historic Properties Affected by the Multipurpose Operations of Fourteen Projects of the FCRPS (SWPA)* for Compliance with Section 106 of the NHPA. The Albeni Falls Dam Historic Properties Program adheres to a Historic Properties Management Plan (HPMP). This strategic document is essential for managing and protecting historic properties by establishing the necessary policies, procedures, and actions to ensure legal compliance with the NHPA. The HPMP provides outlined procedures on inventory and assessment, legal compliance, preservation strategies, management goals and objectives, public engagement and education, monitoring and evaluation, funding and resources, and emergency management. The HPMP ensures effect management and protection of Historic Properties, balancing O&M needs with preservation goals. The Project Archaeologist is currently revising the 2008 HPMP.

Finding: All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on the analysis presented in the EA, which has incorporated or referenced the best information available; the reviews by other Federal, State, and local agencies, and Tribes; input of the public; and the review by my staff; it is my determination that the recommended plan would not cause significant effects on the quality of the human environment. Therefore, preparation of an Environmental Impact Statement is not required.

Comment Submission:

Submit comments to this office, Attn: Daniel Taylor, 4735 E. Marginal Way S. Bldg. 1202, Seattle, WA, 98314-2388, no later than 30 days after the posting of this notice to ensure consideration.

In addition to sending comments via mail to the above address, comments may be e-mailed to albenifalls.masterplan@usace.army.mil. This Notice and the Draft EA/FONSI can be found online at the link below.

Project Name: Albeni Falls Dam Master Plan

<http://www.nws.usace.army.mil/Missions/Environmental/Environmental-Documents/>

Posting Date: January 26, 2026

End of Comment Period: February 27, 2026

Albeni Falls Project Master Plan Bonner County, Idaho

NEPA ID Number: EAXX-202-GP3-1734361845

Draft Environmental Assessment

January 2026



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Seattle District

Albeni Falls Project Master Plan Bonner County, Idaho

NEPA ID Number: EAXX-202-GP3-1734361845

Draft Environmental Assessment

U.S. Army Corps of Engineers Seattle District
4735 E Marginal Way S Bldg. 1202
Seattle, WA 98134

January 2026

Draft Environmental Assessment Albeni Falls Project Master Plan Bonner County, Idaho

NEPA ID Number: EAXX-202-GP3-1734361845

The responsible agency for the Albeni Falls Project Master Plan is the U.S. Army Corps of Engineers (USACE), Seattle District.

Abstract:

USACE prepared this document in accordance with the National Environmental Policy Act (NEPA). This Draft Environmental Assessment (EA) evaluates the impacts of development and operations proposed in the updated Albeni Falls Dam Master Plan. USACE updated the Master Plan in 2023-2024 to replace the previous plan, which was written in 2018.

The Master Plan is a strategic document that outlines how USACE will manage natural, historic properties, and recreational resources on the lands encompassed by the Albeni Falls Dam (AFD) Project. The EA addresses the action of officially adopting the proposed updated Master Plan and the potential effects.

USACE operates and maintains AFD. The Project began operations in 1955. Besides the dam and a reservoir (the top 11 feet of Lake Pend Oreille and 29 miles of the Pend Oreille River), the AFD Project administers 18,708 acres of Project lands.

Master Plans address actions related to the management of Government-owned lands, but do not extend to the management of the reservoir.

Master Plans promote the efficient and cost-effective management, development, and use of project lands. Future site-specific development, operations, and maintenance actions would undergo separate (i.e., tiered) analysis as required by NEPA. A Master Plan is a vital tool for the responsible stewardship and sustainability of project resources for the benefit of present and future generations.

This document is available online:

<http://www.nws.usace.army.mil/Missions/Environmental/Environmental-Documents/>

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Acronyms and Abbreviations

AFD	Albeni Falls Dam
BMPs	Best Management Practices
EA	Environmental Assessment
ESA	Endangered Species Act
°F	Degrees Fahrenheit
ESA	Endangered Species Act
IDFG	Idaho Department of Fish and Game
IDEQ	Idaho Department of Environmental Quality
ISDA	Idaho State Department of Agriculture
MSL	Mean Sea Level
NAAQS	National ambient air quality standards
NEPA	National Environmental Policy Act
NRCS	Natural Resource Conservation Service
NWP	Nationwide Permit
O&M	Operation and Maintenance
PBFs	Physical and Biological Features
PL	Public Law
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WMA	Wildlife Management Area

1 Proposal for Federal Action

The U.S. Army Corps of Engineers, Seattle District (USACE) prepared this Environmental Assessment (EA) to comply with the National Environmental Policy Act of 1969 (NEPA), regulations of the Council on Environmental Quality for implementing the procedural provisions of NEPA (40 CFR parts 1500-1508), and USACE procedures for implementing NEPA (33 CFR 230).

Pursuant to Section 102(C) of NEPA, this assessment evaluates the environmental consequences of the proposed development and adoption of an updated Master Plan to replace the existing 2018 Master Plan, for management of natural, historic properties, and recreational resources at the Albeni Falls Dam (AFD) Project located in Idaho.

1.1 Project Location

AFD is on the Pend Oreille River in Bonner County, Idaho, just east of the Washington-Idaho border, approximately 50 miles northeast of Spokane, Washington and 25 miles west of Sandpoint, Idaho (Figure 1). Near the dam are the two small towns of Oldtown, Idaho, and Newport, Washington. The AFD Project covers a total of 18,708 acres. Of those, 4,241 acres are fee title acres of land and water, with 4,046 acres in outgrants. Fee lands consist of numerous non-adjacent parcels situated along both banks of the Pend Oreille River, and the northern shore of Lake Pend Oreille.

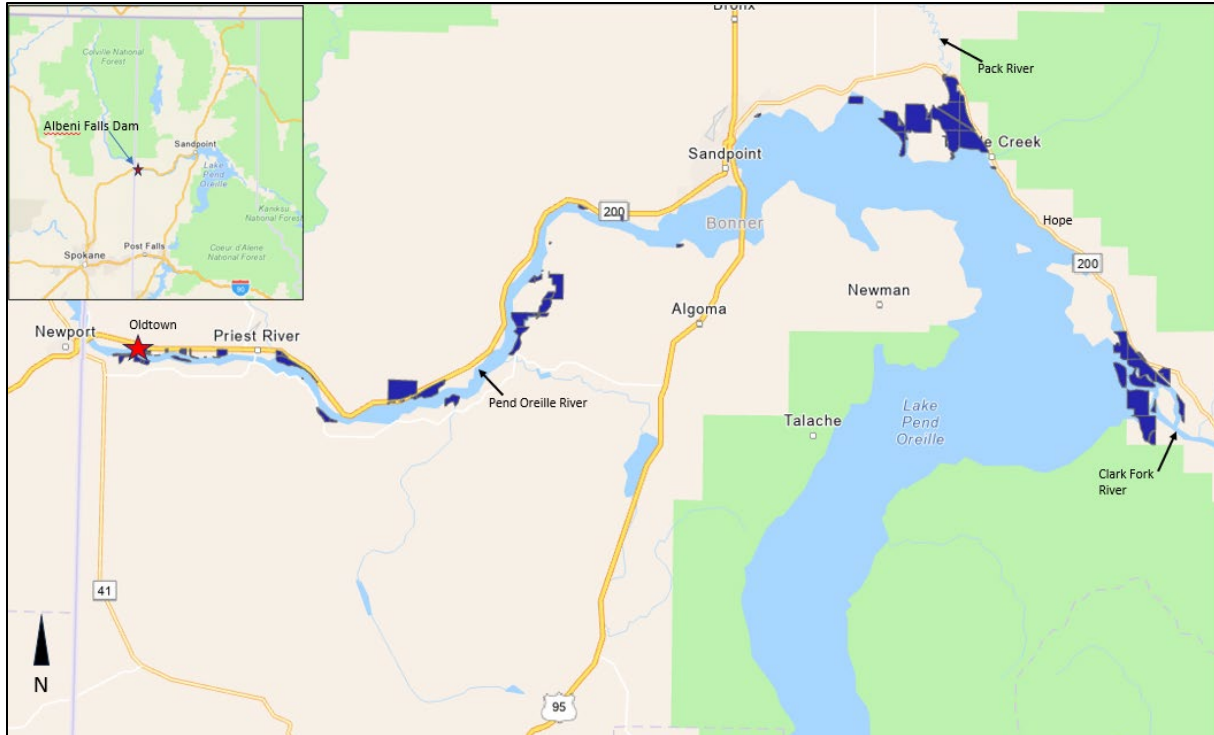


Figure 1. Location of the AFD Project (red star) and Project lands (blue polygons) in Bonner County, Idaho. Inset shows where the AFD Project is in North Idaho.

1.2 Authority

AFD is named after Albeni Poirer, an early French-Canadian pioneer who homesteaded and developed the area around the falls. Congress authorized AFD's construction under the Flood Control Act of 1950 (Public Law [P.L.] 81-516) in response to a great flood that swept over the river valleys of the Columbia River Basin in 1948. Construction began in January 1951 and finished in December 1955, with regulation of water levels on Lake Pend Oreille starting in 1952. AFD serves five authorized project purposes: hydropower, flood risk management, navigation, recreation, and fish and wildlife conservation.

1.3 Purpose and Need

The purpose of the AFD Project Master Plan is to outline how USACE will preserve, conserve, restore, maintain, manage, and develop USACE project lands and associated resources in accordance with USACE guidance. Master Plans are to be kept current and reviewed once every 5 years (USACE, 1996, EP 1130-2-550). The current Master Plan prepared in 2018 must be reviewed to ensure it still reflects current recreation and

public use, historic properties status, invasive and endangered species, and wildlife habitat value.

An updated Master Plan allows the public an opportunity to provide guidance and feedback on the USACE proposed management of project lands. The updated Master Plan would provide a comprehensive description of the project, discuss factors influencing resource management and development, identify site-specific problems, provide a synopsis of public involvement and input, and describe past, present, and proposed development.

2 Proposed Action and Alternatives

USACE is proposing to adopt the updated Master Plan for AFD, incorporated by reference. USACE formulated, evaluated, and screened alternatives for determining the action that meets the Federal Standard. USACE regulations define the Federal Standard as the least costly alternative that is consistent with sound engineering practices and meets all Federal environmental requirements. This section describes the range of alternatives that were evaluated and screened for selection of the preferred alternative and identifies the preferred alternative that was selected.

2.1 Alternative 1: No Action Alternative

The No Action Alternative represents no change to current management practices. Therefore, the No Action Alternative would continue with the existing practices described in the existing 2018 Master Plan. However, future developments or resource management policies would require approval on a case-by-case basis without the benefit of evaluation in the context of an updated comprehensive plan.

Environmental conditions and operational considerations have changed since the 2018 Master Plan was implemented. Further environmental studies have been completed, and some of the science of natural resources management has progressed since 2018. In the context of these changes, the No Action Alternative would leave that 2018 guidance unchanged for project development and management and would not take advantage of the new information.

2.2 Alternative 2: Update AFD Master Plan (Preferred Alternative)

Under Alternative 2, the updated Master Plan largely retains the same vision of balancing the growing public demand for recreation with the need to protect natural resources. The updated Master Plan is also organized by management area similar to the 2018 Master Plan. The updated Master Plan does not change land classifications or resource objectives outlined in the 2018 version.

The updated Master Plan proposes updates and changes to the following key areas:

- The organizational structure of management units.
- Broadened focus in the management of wildlife habitat.
- Changes to the treatment of invasive species.
- Updates to development needs of management units.

The updated Master Plan improves the organization of some of the management units by splitting them into separate units. The updated plan also delineates between recreation areas managed by USACE and wildlife management areas (WMAs) managed by IDFG. For instance, Hawkins Point is now identified separately from the Pack River Delta WMA, and the Clark Fork River Delta Management area is split into the following three management units: Unit 1 - Drift Yard Facility, Unit 2 - Johnson Creek Recreation Area, and Unit 3 - Wildlife Habitat Restoration Area.

The updated Master Plan broadens the focus of managing wildlife habitat cover types and treating invasive species. Many of the USACE lands are forested, often with both forested wetlands and dry upland forested areas. A site-specific forest management plan for these vegetation cover types will enhance the health of these forested resources and reduce the risk of soil erosion, and disease.

The updated Master Plan recommends the development and implementation of vegetation management and integrated pest management plans. The AFD Project has historically focused on monitoring and treating aquatic invasive weeds such as Eurasian watermilfoil (*Myriophyllum spicatum*) and flowering rush (*Butomus umbellatus*). However, since the publication of the 2018 Master Plan, the frequency of detecting new infestations of terrestrial weeds and the expansion of known invasive weeds has increased.

Exotic reed canarygrass (*Phalaris arundinacea*) is not listed under Bonner

County as a noxious weed, but the weed is invasive and currently dominates all wetland habitat cover types on USACE lands. Other weeds identified in the 2018 Master Plan needing control include spotted knapweed (*Centaurea stoebe*) and yellow-flag iris (*Iris pseudacorus*). These noxious weeds, as well as others listed in Appendix B of the Master Plan, require an integrated, planned approach to their control.

Alternative 2 recommends a pest management plan that directly addresses the control of reed canarygrass and other invasive species. Under Alternative 2, USACE would work to reduce the presence of invasive species in both aquatic and terrestrial habitats following vegetation and pest management plans.

Also under Alternative 2, USACE would conduct, but would not be limited to, the following routine O&M actions:

- Repair and maintenance of buildings.
 - Reroofing
 - Repainting
 - Electrical replacement and/or upgrades
 - Repair/replacement/upgrades of plumbing.
- Repaving or improving road surfaces
- Recreation Area Improvements.
 - Replacing portable offices with permanent structures
 - Replacing restrooms with ADA-compliant restrooms and/or shower facilities
 - Electrical service upgrades
 - Vegetation plantings
 - Shoreline stabilization projects
 - Installing new paved trails and walkways
 - Installing signage
 - Changing fence types on Park boundaries
 - Installing playground equipment
 - Improving or installing lawn sprinkler systems
 - Lighting along trails
 - Installing, replacing, or upgrading picnic tables and table pads
 - Installing, replacing, or maintaining docks, boat ramps, tie downs, fishing piers, and pilings
 - Adding or modifying campsites to accommodate more users or volunteers
 - Installation of one-way traffic control spike-barrier gates at recreation area entrances

Maintaining facilities, improving some facilities, and protecting natural areas and resources involve several small-scale actions for proposed future developments under the updated Master Plan. These identified development needs and descriptions for each management area under the updated Master Plan are summarized in Table 1. The improvements outlined in Alternative 2 with an updated Master Plan constitute the environmentally preferred plan.

Table 1. List of proposed routine O&M and small-action development needs identified for the AFD Project organized by management area.

Management Area	Item No.	Development Need	Description of Proposed Action
Vista Recreation Area	1	Renovate irrigation system to extend and replace with pop-up heads	Digging by hand or with equipment to remove the old irrigation and water systems or install a new irrigation and water system. Install pop-up heads, distribution lines, solenoids, and other equipment.
	2	Design and install interpretive signage	Digging by hand or with equipment to remove old signage or to install new signage.
	3	Landscaping work including turf renovation and plantings	Digging by hand or with equipment to remove old plantings or to install new plantings.
	4	Install lighting on pathway from Visitor Center to powerhouse	Digging by hand or with equipment to install new lighting, to include receptacles and stanchions.
	5	Update interpretive exhibits, signs and displays in and around the powerhouse and Visitor Center within the Vista.	Removal by hand and with equipment exhibits, signs, and displays in various areas, which may include digging in some areas.
	6	Playground installation	Installation by hand or with equipment, to include digging, ground clearing and tree removal.
	7	Install a volunteer park campsite	Installation by hand or with equipment, may include digging and vegetation removal.
	8	Crack seal and seal coat parking areas, access roads and paved trail	Install by hand or with equipment new coating and sealant, which may include vegetation removal from cracks.

Management Area	Item No.	Development Need	Description of Proposed Action
	9	Construct building for storage of equipment and materials in Natural Resources Management Maintenance	Install by hand or with equipment a new storage building which may include digging.
	10	Trail installation to facilitate Pend Oreille River Passage Trail, connecting Oldtown with Sandpoint	Install by hand or with equipment a gravel or paved trail through the Upper Vista Area, which may include digging and ground clearing.
Albeni Cove Recreation Area	1	Redesign and rehabilitate remaining campsites	Install by hand or with equipment materials to redesign and rehabilitate campsites. Install timbers or other materials to define campsite as well as pave or backfill site to harden impact area.
	2	Replace restroom	Remove failing building by hand or with equipment. Either construct or place new building to house restroom facilities for visitors. Work may include reconfiguration of waste and water lines.
	3	Repair trails leading to tent-only sites	Remove by hand or with equipment old base material. Grade, level and pave or add gravel or other suitable base materials.
	4	Finish bridge repair (railing)	Remove and install railing and associated apparatus by hand or with equipment.
	5	Repair, redesign, expand and repave roadways	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Add base rock or other material to support new pavement.
	6	Add trails and hard-surface trails for accessibility	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Grade, level and pave or add gravel to provide ADA access.

Management Area	Item No.	Development Need	Description of Proposed Action
	7	Pave boat overflow parking area	Add base rock and asphalt either by hand or with equipment, to include excavation for leveling or other purposes.
	8	Provide shade in the Volunteer Village	Installation by hand or equipment.
	9	Construct a playground	Installation by hand or with equipment, to include digging, ground clearing and tree removal.
	10	Renovate picnic area for accessibility	Add base rock or other material to support new pavement or other hardscape either by hand or with equipment
	11	Construct interpretive amphitheater	Install by hand or with equipment hardscape such as rock or pavement, add bench seating, construct a stage or platform for presentations.
	13	Stabilize beach from further erosion	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of sand or other material.
	14	Install potable water spigots for filling camping trailers	Install by hand or equipment water lines to spigots at various locations within the campground for visitors to fill RV water tanks.
Northshore Strips WMA	1	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.
Strong's Island WMA	1	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.

Management Area	Item No.	Development Need	Description of Proposed Action
Priest River Recreation Area	1	Redesign and rehabilitate campsites	Install by hand or with equipment materials to redesign and rehabilitate campsites. Install timbers or other materials to define campsite as well as pave or backfill site to harden impact area.
	2	Replace playground	Installation by hand or with equipment, to include digging, ground clearing and tree removal. Removal of old equipment by hand or with equipment for disposal.
	3	Renovate sports field	Light excavation of grounds and structures by hand or with equipment, resurfacing, grading, and installation of structures for sports activities.
	4	Repair, redesign, expand and repave roadways and trails	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Add base rock or other material to support new pavement.
	5	Add and hard-surface trails for accessibility	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Grade, level and pave or add gravel to provide ADA access.
	6	Renovate picnic area for accessibility	Install by hand or with equipment material to grade, level and pave or add gravel to provide ADA access. Work may include adding shade shelters, concrete pads, picnic tables, trails, or other features to improve access.
	7	Replace pumphouse	Remove existing building by hand or with equipment. Work would include excavating and repairing or installing new foundation and replacement water intake lines from the city. Either construct or place new prefabricated building to house water distribution from the city and provide storage.
	8	Replace restrooms and their buildings	Remove failing building by hand or with equipment. Either construct or place new building to house restroom facilities for visitors. Work may include reconfiguration of waste and water lines.

Management Area	Item No.	Development Need	Description of Proposed Action
	9	Pave boat overflow parking area	Add base rock and asphalt either by hand or with equipment, to include excavation for leveling or other purposes.
	10	Install concrete sidewalks to and around the beach restroom to support accessibility and turf damage	Install by hand or with equipment base rock to support pavement. Work would include grading, excavating, and leveling.
	11	Install hookups for campsites (water/power/sewer)	Install by hand or with equipment, electrical, water, and sewage distribution and points of contact.
	12	Install potable water spigots for filling camping trailers	Install either by hand or with equipment a well to produce potable water for the site. Work would include digging, excavating, and running water lines to needed distribution points.
	13	Replace floating courtesy dock with a fixed pier dock	Install by hand or with equipment standing supports and pier structure.
	14	Renovate irrigation system	Digging by hand or with equipment to remove the old irrigation and water systems or install a new irrigation and water system.
Priest River WMA	1	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.

Management Area	Item No.	Development Need	Description of Proposed Action
Carry Creek WMA	1	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of sand or other material. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.
	2	Addressing invasive and noxious weeds	Remove or treat either by hand or with equipment noxious or invasive weeds. Removal includes mechanical, chemical or by hand.
Riley Creek Recreation Area	1	The repair of tree-heaved access roads and trails is needed	Removal either by hand or with equipment tree roots damaging roads. Work would include cutting pavement and root structure, backfilling and repaving excavated pavement area.
	2	Replace playground equipment	Installation by hand or with equipment, to include digging, ground clearing and tree removal. Removal of old equipment by hand or with equipment.
	3	Addition of shade shelters at the beach	Installation by hand or with equipment support and shading structures.
	4	Replacement of dump station and drain field	Removal of existing structures and materials with equipment or by hand and installation of new station.
	5	Replace restroom buildings	Remove failing building by hand or with equipment. Either construct or place new building to house restroom facilities for visitors. Work may include reconfiguration of waste and water lines.
	6	Dredging of the boat basin during low water would ensure safe navigation	Excavation of soils and sediments during low water elevation.
	7	Installation of new park benches	By hand or with equipment, install benches and foundations if needed. Digging may be required.
	8	Addition of interpretive signage highlighting the historical/tribal significance of the area	Install signage by hand.

Management Area	Item No.	Development Need	Description of Proposed Action
Riley Creek WMA	1	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.
Hoodoo Creek WMA	1	Explore opportunities to improve boating access to the Pend Oreille River by improving road, parking lot, and installing a boat ramp	Install by hand or with equipment features to improve public access to the land and water. Improvements include paving, parking, and installing a boat ramp, dock, or a pit toilet.
	2	Addition of interpretive signage highlighting the historical/tribal significance of the area	Install signage by hand.
	3	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.
Morton Slough WMA	1	Continued maintenance of parking lot	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Add base rock or other material to support new pavement.
Carr Creek WMA	1	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.
Springy Point Recreation Area	1	Redesign and rehabilitate campsites	Install by hand or with equipment materials to redesign and rehabilitate campsites. Install timbers or other materials to define campsite as well as pave or backfill site to harden impact area.

Management Area	Item No.	Development Need	Description of Proposed Action
	2	Repair and repave roads and trails	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Grade, level and pave or add gravel to provide ADA access.
	3	Add and harden surface trails for accessibility	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Grade, level and pave or add gravel to provide ADA access.
	4	Renovate picnic area for accessibility	Install by hand or with equipment material to grade, level and pave or add gravel to provide ADA access. Work may include adding shade shelters, concrete pads, picnic tables, trails, or other features to improve access.
	5	Repair trail due to erosion on the southwest corner of the property	Repair either by hand or with equipment failing bank protecting by adding rock/riprap to protect shoreline from erosion.
	6	Install fencing to delineate boundary on west line	Install by hand or with equipment fencing to delineate boundary.
	7	Bank stabilization to protect the north end of the property	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.
	8	Easement for accessing "The Point"	Real estate action.
Oden Bay WMA	1	Boating access	Construction of structures and installation of materials comprising roadway access, a parking area, a boat ramp, dock, and restroom facilities.
Pack River Delta WMA	1	Addressing invasive and noxious weeds	Remove or treat either by hand or with equipment noxious or invasive weeds. Removal includes mechanical, chemical or by hand.
Hawkins Point Recreation Area	1	Restoration of site following long term encroachment and installation of unauthorized structures	Clearing and removal of unauthorized structures away by hand or with equipment.

Management Area	Item No.	Development Need	Description of Proposed Action
Trestle Creek Recreation Area	1	Install fence on northeast-west borders	Install fencing by hand or with equipment to delineate boundary.
	2	Place boulders on lawn/road edge to manage vehicle access	Install boulders by hand or with equipment material to delineate boundary and prevent unauthorized access.
	3	Repair and repave roads and trails	Remove by hand or with equipment old pavement and/or base material. Fill cracks, potholes, or other deficiencies. Grade, level and pave or add gravel to provide ADA access.
	4	Replace restroom	Remove failing building by hand or with equipment. Either construct or place new building to house restroom facilities for visitors. Work may include reconfiguration of waste and water lines.
	5	Rehabilitate beach	When the lake is drawn down, add / remove by hand or with equipment beach sand or other material to improve public water access. Work may include removal of current material, grading, leveling, and applying new material.
	6	Add and hard-surface trails for accessibility	Remove by hand or with equipment old pavement or base material. Fill cracks, potholes, or other deficiencies. Grade, level and pave or add gravel to provide ADA access.
	7	Renovate picnic area for accessibility	Install by hand or with equipment material to grade, level and pave or add gravel to provide ADA access. Work may include adding shade shelters, concrete pads, picnic tables, trails, or other features to improve access.
	8	Bank stabilization from beach to gage well	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.

Management Area	Item No.	Development Need	Description of Proposed Action
	9	Install potable water	Install either by hand or with equipment a well to produce potable water for the site. Work would include digging, excavating, and running water lines to needed distribution points.
	10	Install a park attendant site	Install either by hand or with equipment a campsite for volunteers. Work would include running utilities and installing other features.
Clark Fork River Delta WMA	1	Bank stabilization	When the lake is drawn down, install hardscape or rip-rap by hand or equipment to stabilize eroding bank, to include backfill of rock. Stabilization would include willows for native cover and bank stability as well as adding native seed for vegetation.
	2	Controlling aquatic and terrestrial invasive/noxious weeds	Remove or treat either by hand or with equipment noxious or invasive weeds. Removal includes mechanical, chemical or by hand.

3 Alternatives Comparison

This section provides information on the existing conditions of resources within the project area and issues relevant to the decision process for selecting the preferred alternative. Existing conditions are the physical, chemical, biological, and socioeconomic characteristics of the project area. Factors for selecting the preferred alternative include which of the alternatives meet the Federal standard and the purpose and need for the project. The resources evaluated for detailed analysis and a rationale for inclusion or exclusion are presented in Table 2. USACE excluded resources from detailed analysis if they are not potentially affected by the alternatives or have no meaningful bearing or are not relevant for this decision-making process.

Table 2. List of resources considered for detailed effects analysis and rationale for inclusion or exclusion.

Category	Resource	Included in Detailed Analysis (Y/N)	Rationale for inclusion or exclusion
Physical	Air Quality	Y	Handheld equipment, rider mowers, and a tractor would be used on project lands and would not be expected to impact air quality above ambient levels. Analysis is needed for proposed O&M and small-scale actions that may require heavy equipment such as an excavator, bulldozer, or dump truck.
	Geology and Soils	Y	Some O&M or small-scale actions in the proposed updated Master Plan may affect soils as some ground disturbance may occur.
	Groundwater	N	No routine O&M or small-scale actions in the proposed updated Master Plan would affect the ground water resources.
	Hydraulics and Geomorphology	N	No routine O&M or small-scale actions in the proposed updated Master Plan would affect the regional hydraulics or geomorphology.
	Hazardous, Toxic, and Radioactive Waste	N	No radiological waste is in or near the project sites. No new contaminants would be released to the environment due to the proposed action.
	Land Use, Utilities, and Infrastructure	N	The proposed action would have no substantial effect on electricity, water, wastewater and stormwater collection, sewer and solid waste, natural gas, oil/petroleum, or telecommunications services.
	Water Quality	Y	Analysis is required to determine the potential impacts from using chemicals during routine O&M actions like treating walkways (sealants), vegetation (fertilizers and herbicides) or pests (pesticides).
Biological	Fish	Y	Fish species are present in the Pend Oreille River and Lake Pend Oreille, and activities on land can directly affect species in adjacent water bodies.
	Invasive Species	Y	Proposed project has some risk for the introduction of invasive species from the movement of soils and plants. BMPs prior to any minor construction or repair actions would be implemented to reduce the risk of introduction.

Category	Resource	Included in Detailed Analysis (Y/N)	Rationale for inclusion or exclusion
	Threatened and Endangered Species	Y	Federally listed bull trout (<i>Salvelinus confluentus</i>) occur in the Pend Oreille River and in Lake Pend Oreille. Other federally listed species such as grizzly bear, North American wolverine, Canada lynx and the candidate species Monarch butterfly have the potential to be present on USACE lands.
	Vegetation	Y	Analysis is required as the continued O&M of vegetated areas in recreation and wildlife management areas are proposed in the updated Master Plan.
	Wetlands	Y	Wetland habitats are present on USACE lands and analysis is required to determine the potential impacts of the proposed O&M and small-scale actions to this habitat cover type.
	Wildlife (mammals and birds)	Y	Analysis is required to determine potential impacts of the proposed O&M and small-scale actions to wildlife species. Large and small mammals, water birds and waterfowl are present on project lands.
Socioeconomic	Social, Economic, and Recreational Resources	Y	The AFD Project lands are economically important to the local community and visiting public for recreational purposes. AFD Project lands provide scenic values and unique recreational experiences for the public, and the proposed action would continue and improve these experiences.
	Historic Properties	Y	Analysis is required under the National Historic Preservation Act and other Acts to determine the extent of any potential effects of Federal actions on archaeological sites and historic properties.

3.1 Air Quality

In accordance with the Clean Air Act, the Environmental Protection Agency (EPA) sets standards for air quality to regulate pollutants considered harmful to the environment and public health. The National ambient air quality standards (NAAQS) are set for six common air pollutants: ozone, carbon monoxide, nitrogen dioxide, particulate matter (solid and liquid particles suspended in the air), sulfur dioxide, and lead. Areas that do not meet the national ambient air quality standards are designated non-attainment areas. The EPA sets *de minimis* thresholds for pollutants in non-attainment areas. However, the thresholds do not apply

to “routine maintenance and repair activities” that would result in an increase in emissions that is clearly *de minimis* (40 CFR 93.153(c)(2)). NAAQS are met across Idaho, but the Idaho Department of Environmental Quality (IDEQ) continue to monitor air quality in 6 maintenance areas. The Sandpoint maintenance area overlaps with the project area. It was designated as a nonattainment area for large particulate matter (PM₁₀ NAAQS) in 1990 due to residential wood burning, fugitive road dust, and industrial source emissions. Retention of particulate matter in the area is facilitated by the region’s topography. After progressive improvements to air quality and adoption of a limited maintenance plan, the EPA redesignated the area as attainment in 2013 (78 FR 7340).

The project location is a CAA attainment area for the six common air pollutants and air quality meets all NAAQS. The IDEQ monitors air quality at Sandpoint for PM_{2.5} and PM₁₀ in the project area. The EPA established the Air Quality Index (AQI) as a simplified tool for communicating daily air quality forecasts and near real-time information to people for planning their daily activities. The AQI indicates how clean or polluted air is and what associated health effects might be a concern. It focuses on health effects that may be experienced within a few hours or days after breathing polluted air. An AQI value of 100 generally corresponds to the air quality standard for the pollutant set to protect public health. Table 3 shows the AQI rating for the most recent 6 years in Bonner County. A higher AQI indicates higher levels of air pollution and greater health concern.

Table 3. Number of Days Spent at Each Air Quality Index (AQI) Rating in Bonner County, ID. Data from the EPA Air Quality Index Report search tool (<https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report>).

Year	Good (0-50 AQI)	Moderate (51-100 AQI)	Unhealthy for Sensitive Groups (101-150 AQI)	Unhealthy (151-200 AQI)	Very Unhealthy (201-250 AQI)
2025 ¹	129	52	0	0	0
2024	272	89	4	0	0
2023	273	86	2	1	1
2022	259	97	5	2	1
2021	260	94	4	4	2
2020	283	72	5	5	0
2019	291	73	1	0	0
2018	258	89	11	4	1

¹ Annual statistics for 2025 are not final until May 1, 2026.

Different greenhouse gases (GHGs) absorb heat energy at different rates. To allow an accurate comparison of GHGs, emissions are often reported in carbon dioxide (CO₂) equivalent (CO_{2e}). CO_{2e} provides a common unit of measure.

The most recent estimates (2022) of annual GHG emissions for Idaho were 38.4 MMT CO_{2e}, primarily from agriculture (41 percent) and transportation (29 percent) (EPA 2023a). Nearby significant sources of GHG emissions (total for 2022) include the Gas Transmission Northwest Pipeline Sandpoint Compressor Station #4 (113,436 MT CO_{2e} Y⁻¹) 11 miles north of Sandpoint, and the Rathdrum Power Electricity Generation facility (638,923 MT CO_{2e} Y⁻¹) 25 miles south of the Pend Oreille River (EPA 2022).

Alternative 1: No Action Alternative

The No Action Alternative would result in periodic, minor emissions from automobiles, power tools, and construction equipment exhaust related to site inspections, maintenance, and repairs. Impacts to air quality for the present level of maintenance and operation activities are *de minimis* under Federal emissions thresholds in maintenance or non-attainment areas (40 C.F.R. § 93.153). Vehicles, heavy equipment, and maintenance tools would temporarily and locally generate increased exhaust emissions.

Due to the variable and intermittent nature of maintenance, monitoring, and repair activities in the project area, it is impractical to accurately estimate activity-specific impacts to air quality and GHG emissions.

USACE estimated expected total emissions for the project using conservative estimates for equipment horsepower, average equipment or fleet year, and maximum expected equipment run time over a given year with equipment-specific emission rates from the OFFROAD2007 model-based database (CARB 2007), the SORE2020 model (CARB 2021), and EPA’s vehicle emissions testing database (EPA 2021). This OFFROAD2007 model does not calculate nitrous oxide directly, so USACE calculated this component with a factor of 0.92 gN₂O per gallon fuel (EPA 2024a). Emissions would be direct, local, short-term, and long-term. Emission rates and summary emissions can be found in Appendix A. Annual total activities associated with maintenance and operations could directly emit up to 168 tons of CO₂, 0.02 tons of methane, and 0.02 tons of nitrous oxide, which have equivalent global warming potentials of 29.8:1 and 273:1 to CO₂ respectively (IPCC 2021). This level of emissions is roughly equivalent to annual emissions of 34 average US households (EPA 2024b). The No Action Alternative will not cause significant effects as the emissions are less than de minimis and would not collectively or in isolation affect the local environment, nor significantly contribute to further acceleration of climate change.

Alternative 2: Updated Master Plan (Preferred Alternative)

Maintenance and operation of the project area under the preferred alternative would be similar to the No Action Alternative. Development actions include small-scale construction activities, such as bank stabilization, surface grading, and recreation site development would involve a moderately increased use of heavy equipment. USACE estimated annual emissions under a scenario of high development activity with the same methodology described above. Emissions would be direct, local, short-term, and long-term. Emission rates and summary emissions can be found in Appendix A, annual estimates and thresholds are in Table 4. Annual total activities associated with maintenance and operations could directly emit up to 286 tons of CO₂, 0.03 tons of methane, and 0.03 tons of nitrous oxide, which have equivalent global warming potentials of 29.8:1 and 273:1 to CO₂ respectively (IPCC, 2021). This level of emissions is roughly equivalent to annual emissions of 58 average US households (EPA 2024b). While the preferred alternative might have more emissions than the No Action Alternative, it will not cause significant effects as the emission rates are de minimis and will not significantly contribute to further acceleration of climate change.

Table 4. Estimated annual air pollutant and GHG emissions (metric tons/year) for each

alternative.

Emission Type	NOx	SOx	CO	VOC	PM¹	GHG²
Alternative 1	0.55	0.00	6.33	0.36	0.03	173
Alternative 2	1.18	0.00	7.08	0.47	0.07	294
Threshold	100	100	100	100	100	N/A

3.2 Geology and Soils

Savage (1965) provides a detailed geologic history of Lake Pend Oreille, and a summary is provided here. Lake Pend Oreille is surrounded by three frontal mountain ranges (Selkirk, Cabinet, and the Bitterroot) of the Rocky Mountains. The Cabinet Mountain Range is composed of Precambrian, slightly metamorphosed or altered rocks, called the Belt Series. In northwest Idaho, granitic rocks of the Kaniksu batholith hold up the Selkirk Range. Many of the minerals found in northern Idaho are thought to have been formed with the Kaniksu batholith (between 120-100 million years ago).

Prior to that time, during the Precambrian period (more than 600 million years ago), shallow seas inundated northern Idaho. Sediments of clay, silt and sand settled out of brackish waters as seas retreated, and these soils folded and faulted. The parent rocks of soils developed from the Precambrian Belt Supergroup weathered to form coarse fragments (60-70 percent), fine silts (20 percent plus), and a small amount of gravel and sand fraction.

Around 2.6 million years ago, the Pend Oreille Subbasin was periodically covered by a thick ice sheet, during which major glacial events significantly reshaped the landscape. The melting of glaciers produced vast quantities of runoff, carrying rock debris across the terrain. The rupture of glacial dams caused extreme flooding, further eroding the

¹ PM2.5 and PM10 are combined in this table. Each is regulated at 100 tons/year for emissions.

² Green House Gases (GHG) represents the sum of carbon dioxide, nitrous oxide, and methane.

landscape. As the glaciers receded and the continental ice sheet withdrew, a series of proglacial lakes formed along the Pend Oreille River valley. Glacial deposits of gravel, sand, silt, and clay were widely spread across both the valley floor and surrounding mountains. Over time, much of the silt and clay laid down in these proglacial lakes has been buried by more recent alluvial sand deposits, transported by the Pend Oreille River.

Soils on USACE lands are predominately composed of Wrencoe silty clay, Capehorn silt loam, and Elmira loamy sand. The Wrencoe silty clay soils are found in flood plains and stream terraces and are considered poorly drained, have low cohesion, and are easily eroded (NRCS 2024). At the banks of the river and lake, saturation weakens soil structure and can kill vegetation that contribute to bank stabilization. During the summer high-elevation water control of the lake, barren banks are degraded by wake and wind generated waves. Site soils are also affected by erosion within burrows created by burrowing animals. Both overland flow and hydraulic overpressure from wave action at the burrow entrance in the pool result in rapid sediment loss.

Alternative 1: No Action Alternative

Under the no action alternative, existing conditions will likely persist. Shoreline erosion would continue at several recreation and wildlife management areas due to the ongoing operations of AFD.

Alternative 2: Updated Master Plan (Preferred Alternative)

Under Alternative 2, USACE proposes several shoreline bank stabilization projects as development needs. With the proposed action, the banks at project sites would be stabilized with Class III riprap or smaller diameter spall rock. All work for the proposed bank stabilization projects would be conducted above water during the winter months when the lake is at its lowest water surface elevation. As waves and wind influence the area after construction, sediment in shallow areas may disperse into the lake. However, this effect is expected to be temporary as the sediment would quickly be dispersed by the current and posing no long-term impact on the area's geological stability.

Shoreline armoring can cause accelerated erosion and scouring at the waterward toe and upstream and downstream ends of the armored sections. Armoring can impede natural erosional processes and sediment transport along a riverbank, which can affect local rates of erosion and accretion. Changes in erosion and accretion rates can affect the

formation, persistence, and location of sediment bars.

Conversely, hard armoring can also provide localized erosion control and bank stabilization in areas experience excessive erosion or bank failure. Bank stabilization projects proposed in the updated Master Plan largely include the repair of shoreline areas where nearby elements of the built environment (e.g., public roads, residences, railroad lines) are threatened or are anticipated to be threatened by sudden or persistent erosion. While maintenance bank stabilization projects can impact shoreline and channel geomorphic processes, USACE will implement avoidance and minimization measures to limit adverse effects such as performing shoreline repairs during low pool in dry conditions, leaving trees and other vegetation in place to the maximum extent practicable, using softer armoring approaches wherever feasible, and constraining hard armoring to the minimum length of shoreline necessary to protect existing infrastructure. In addition to voluntary measures USACE will take to limit the effects of maintenance bank stabilization projects, these projects will likely rely on existing programmatic compliance authorizations (e.g., Nationwide Permits, general water quality certification) that have non-discretionary avoidance and minimization conditions required for their use.

Due to the implementation of voluntary and non-discretionary avoidance and minimization measures and the limited scope of bank stabilization maintenance proposed under the updated Master Plan, USACE anticipates the potential adverse effects of bank stabilization projects on geology and soils will be individually and cumulatively minor.

3.3 Water Quality

Lake Pend Oreille is an oligotrophic, or nutrient-poor, body of water (Falter et al. 1992). Assessment of nearshore water quality data collected between 1989 and 2003 (Falter 2004) and from 2003 through 2007 (TSWQC 2009) indicated no significant trend in nearshore nutrients, chlorophyll a, or transparency, as measured during the summer months. Falter (2004) concluded that nearshore littoral zones maintained a meso-oligotrophic classification between 1989 and 2003.

Lake Pend Oreille was placed on the State of Idaho 303(d) list in 1994, primarily in response to public concern over the presence of nuisance algae. The lake remained on the 303(d) list in 1996 and 1998. No specific pollutant was identified. Several likely sources of nutrients contributing to algae growth in the lake were identified including residential development,

septic tanks, and urban runoff (TSWQC 2002). In addition, elevated total dissolved gas saturation levels found in Lake Pend Oreille and at AFD are influenced by the operation of Cabinet Gorge Dam, which is about 50 miles upstream on the Clark Fork River (IDEQ 2008). Since 2002, the Pend Oreille River has been included in the Section 303(d) list as impaired for temperature, and total phosphorus.

Water control operations for the Federal Columbia River Power System can impact reservoir resources at the AFD Project, including water quality. However, implementation of neither the No Action Alternative nor the preferred alternative (Update Master Plan) would influence decisions related to reservoir operations. Impacts discussed below correlate to management of natural and historic properties, visitor access, and facility use. Reservoir operations have adverse impacts on reservoir water quality but are not within the purview of management discussed in these alternatives. Any construction or vegetation management activities would require analysis and coordination with regulating agencies to protect water quality.

Alternative 1: No Action Alternative

Impacts to water quality from operation of recreation and wildlife lands at the AFD Project would remain unchanged under the No Action Alternative. Requirements for water quality are fulfilled pursuant to the Clean Water Act and other associated regulations and executive orders. Routine maintenance actions, such as repair and maintenance of buildings, improving road surfaces, recreation area improvements, public use of shoreline, and vegetation maintenance would use BMPs to avoid or minimize potential impacts to water quality. Water quality and wastewater treatment management would remain the same. Future development or program changes would be restricted by USACE policy, creating potential adverse impacts.

Alternative 2: Updated Master Plan (Preferred Alternative)

Alternative 2 would have no impacts from routine O&M of facilities, natural and historic properties during initial implementation. The updated Master Plan would provide beneficial effects from improved vegetation management and recreation development. With long-term balanced planning, this alternative would be more effective for protecting water quality through improved vegetation management and managed development. Water quality impacts from specific recreation and environmental management actions are anticipated to be minor. With any

construction, or ground disturbing actions, BMPs would be used to reduce potential adverse impacts such as soil disturbance, turbidity, noise, etc (Attachment 1, Appendix D). The updated Master Plan is intended to enable efficient and improved land management over a long period.

Bank stabilization and repair measures are expected to meet the requirements of the Clean Water Act Section 404(f)(1)(B) exemption or NWP 3 and the associated general WQC (Water Quality Certification; IDEQ 2020). If those requirements cannot be met, compliance will be achieved via other pathways (e.g., NWP 13) and may require a WQC from IDEQ. Stabilization activities shall involve the discharge of no more than 1 cubic yard per linear foot below the ordinary high-water mark and no more than 500 linear feet of activity along the bank. Effects of herbicide applications in the aquatic environment were described in an EA published in 2023 to discuss the Program to Control Invasive Aquatic Weeds (USACE 2023). The actions undertaken in this Alternative will not contradict or exceed the described level of activity in that 2023 EA and are anticipated to result in no more than individually and cumulatively minor adverse effects on water quality.

3.4 Fish

The Clark Fork watershed, Lake Pend Oreille, and the Pend Oreille River provide habitat for a variety of native and nonnative fish. . Prevalent native and non-native species include kokanee (*Oncorhynchus nerka*), bull trout, rainbow trout (*O. mykiss*), cutthroat trout (*O. clarkii*), smallmouth bass (*Micropterus dolomieu*), mountain whitefish (*Prosopium williamsoni*), yellow perch (*Perca flavescens*), sucker fish (*Catostomus spp.*) and sunfish (*Lepomis spp.*). Some native species include northern pikeminnow (*Ptychocheilus oregonensis*), peamouth (*Mylocheilus caurinus*), and reidside shiner (*Richardsonius balteatus*). The only native salmonids are westslope cutthroat trout (*Oncorhynchus clarkii lewisi*), bull trout, pygmy whitefish (*Prosopium coulteri*), and mountain whitefish (*Prosopium williamsoni*). The fish populations in the subbasin support tremendously popular recreational fisheries that are valued by anglers and important to local communities. In the past, Lake Pend Oreille had a large kokanee fishery that attracted many anglers, permitting a catch limit of up to 25 fish per person. However, beginning in the late 1990s and into the early 2000s, excessive predation on kokanee by trout, primarily lake trout, resulted in the fishery collapsing. In 2006, IDFG initiated an intensive lake

trout predator suppression program. By 2013, the kokanee salmon population had rebounded sufficiently, allowing anglers to resume a 6-fish daily limit catch. Ongoing state fishery management efforts have since further enhanced the kokanee population, resulting in the current regulations permitting a daily catch of up to 15 fish.

Alternative 1: No Action Alternative

Under the No Action Alternative, impacts to fisheries resources from O&M of recreation and wildlife lands would remain unchanged. The AFD Project would continue to use Resource Objectives and Land Classifications as identified in the 2018 Master Plan. Land uses would remain unchanged, and management of the land and activities would be conducted as it has in the past. There would be no adverse impacts on fish populations from routine O&M of facilities and resources. BMPs would be used to avoid or minimize impacts to aquatic resources from routine operation and maintenance of facilities, or small project construction (Attachment 1, Appendix D).

Alternative 2: Updated Master Plan (Preferred Alternative)

The updated Master Plan would not have adverse impacts on resident fish or aquatic habitat. Under Alternative 2, the updated Master Plan would enable more effective land management, protecting water quality by ensuring forest and wetland habitats are actively managed. The updated Master Plan would comply with USACE policy. Future management of natural resources and recreation access would create minor adverse impacts from vegetation and facilities management. These efforts would result in beneficial impacts, providing for improved use of reservoir resources and reduced long-term impacts to project resources. Improved terrestrial vegetation management and further treatment of invasive vegetation would likely generate positive outcomes for fish habitat functioning.

Maintenance bank stabilization work will likely have some adverse effects on aquatic species and habitats. Shoreline armoring can remove or diminish natural shallow-water habitats used by juvenile fish for rearing, foraging, and refugia. Hard armoring can increase water velocity, resulting in increased scour of the nearby channel bed and bank which degrades habitat for invertebrates and periphyton, important food sources for fish. As discussed in Section 3.2 of this EA, shoreline armoring can also affect local erosion and accretion rates. Changes to erosion and accretion can affect the formation and composition of sediment bars, and provide

spawning substrate for salmon and trout. Hard armoring such as riprap can also provide some beneficial effects for fish and other aquatic animals by creating physical and velocity shelters in the spaces between large rocks.

Bank stabilization, especially harder armoring approaches that use large rock, can degrade or remove the physical conditions and processes that fish rely on for food, shelter, spawning and rearing. Juvenile fish are particularly reliant on natural shoreline conditions that provide more abundant food sources, cooler temperatures, slower water velocities, and shallower depths where larger aquatic predators are less prevalent. Maintenance bank stabilization projects identified in the updated Master Plan could potentially have adverse effects on fish in the Pend Oreille River. However, bank stabilization work will be limited to the minimum amount necessary to protect existing infrastructure or other special areas such as known archaeological sites and during low pool. Vegetation clearing will be kept to the minimum amount necessary, and riparian vegetation will be replanted wherever possible.

Due to the limited and targeted area of shoreline where maintenance bank stabilization is proposed and the voluntary avoidance and minimization measures USACE will implement in accordance with AFD's natural resource and wildlife management missions, USACE anticipates the adverse effects on fish resulting from maintenance bank stabilization projects will be individually and cumulatively minor.

3.5 Invasive Species

Species of particular concern in the AFD Project area include the aquatic invasive weeds, Eurasian watermilfoil and flowering rush, as well as several terrestrial noxious and invasive weeds. Reed canarygrass is an invasive weed but is not classified as a noxious weed in Bonner County. However, reed canarygrass currently dominates all wildlife areas on USACE lands and requires management. A table listing all 52 noxious weeds in Bonner County is found in Attachment 1, Appendix B.

In addition to invasive plant species, exotic aquatic mussels are also a concern. These include Asian clams (*Corbicula fluminea*), zebra mussels (*Dreissena polymorpha*), and quagga mussels (*D. rostriformis bugensis*). In 2012, Asian clams were found in Ellisport Bay (near the town of Hope), but no observations have been reported on USACE lands. Zebra and quagga mussels have spread rapidly across the country since they were

first discovered in the Great Lakes, but these species have not been detected in Lake Pend Oreille. The mussels use byssal threads to attach to trailered boats, docks, anchors, or related gear, allowing them to hitchhike on such equipment between unconnected waterbodies. The State of Idaho operates highway-based boat inspection stations intended to detect and remove mussels before being introduced to unaffected waters. The mussels would have a significant economic impact if they are introduced to Idaho's waters and infrastructure systems. Statewide costs to remediate Dreissenid mussels was estimated to be \$94,474,000 (IANST 2009). Larval quagga mussels were detected in the Middle Snake River in 2023.

Alternative 1: No Action Alternative

Under Alternative 1, USACE would continue to work cooperatively with the Natural Resource Conservation Service (NRCS), Idaho State Department of Agriculture (ISDA), and U.S. Fish and Wildlife Service (USFWS) in monitoring or treating noxious species. Development of a vegetation management plan or pest management plan would not occur under Alternative 1. There would be no comprehensive approach to controlling terrestrial weeds such as reed canarygrass. Noxious weeds would be treated when found; however, no mapping of known terrestrial weed presence nor monitoring of treatment effectiveness would occur. Invasive weeds would continue to invade new areas and spread in areas where the weeds are currently found. This alternative would only continue the aquatic weed control efforts but would not address invasive weeds on USACE lands and so would not fully support USACE policy to prevent or reduce establishment of invasive and non-native species.

Alternative 2: Updated Master Plan (Preferred Alternative)

Alternative 2 addresses invasive species concerns in alignment with current USACE policy by recommending strategies for staff and public education, prevention, early detection, rapid response, and containment aimed at controlling and managing invasive species. This alternative advocates for the development and implementation of both a comprehensive vegetation management plan and an integrated pest management plan. Under Alternative 2, the ongoing aquatic weed treatment program would continue to target invasive plant species, particularly those affecting recreation areas and wildlife management areas. USACE would use data from studies and treatment evaluations to refine and enhance control methods for both aquatic and terrestrial weed

infestations (USACE 2023). In addition, vegetation and pest management plans would be designed to systematically address invasive species. All known infestations of noxious and invasive weeds on USACE lands would be mapped, treated, and monitored to ensure effective management. This alternative would fulfill the goal of controlling invasive vegetation to protect fish and wildlife resources, in accordance with the agency's stewardship objectives.

3.6 Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA), federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. The species listed in Table 3 are protected under the ESA and may occur in the project area. The following sections briefly summarize current knowledge on the presence and use of the project and action areas by these species. More information about the life history and biology of the terrestrial species can be found in Attachment 1, Appendix C. ESA consultation assesses how the proposed project may affect the species, concluding with a determination of effect. Section 3.6 below provides details about project compliance with the ESA.

Table 5. ESA-listed species and designated critical habitat that may be present in or near the AFD Project action area.

Species (Common Name and Scientific Name)	Federal Listing	Critical Habitat in Action Area	Potential Occurrence³ (Likely, Unlikely, or Absent)
Bull Trout <i>Salvelinus confluentus</i>	Threatened Designated Critical Habitat	Yes	Likely
Canada Lynx <i>Lynx canadensis</i>	Threatened Designated Critical Habitat	No	Unlikely
Grizzly Bear <i>Ursus arctos horribilis</i>	Threatened	No	Unlikely

³ Likely means the species could be present in the action area. Unlikely means the species could be present in the action area but due to lack of habitat preference and/or nutritional resources is not expected to be present. Absent means that the species is not present in the action area.

Species (Common Name and Scientific Name)	Federal Listing	Critical Habitat in Action Area	Potential Occurrence³ (Likely, Unlikely, or Absent)
North American Wolverine <i>Gulo gulo luscus</i>	Threatened	N/A	Unlikely
Yellow-billed Cuckoo <i>Coccyzus americanus</i>	Threatened Designated Critical Habitat	No	Absent
Whitebark Pine <i>Pinus albicaulis</i>	Threatened Wherever found	N/A	Unlikely
Monarch Butterfly <i>Danaus plexippus</i>	Proposed	N/A	Likely

Bull Trout

Detailed information on bull trout life history and biology is found in Attachment 1, Appendix D. Critical habitat is designated for bull trout in the action area. Bull trout are present in the Pend Oreille River and the waters of Lake Pend Oreille, and its tributaries. Bull trout are also present in Priest Lake and Upper Priest Lake, and the tributaries of these water bodies, as well as in the Priest River and its tributaries. Lake Pend Oreille bull trout demonstrate the most common migration pattern for adult bull trout – foraging in Lake Pend Oreille and then migrating upstream into smaller lake tributaries to spawn (Fraley and Shepard 1989).

Most bull trout in Lake Pend Oreille are lacustrine-adfluvial (i.e., they complete their life cycle in lakes and rivers, but never go to saltwater), using the lake for a large portion of their life cycle (PBTTAT 1998). These lacustrine-adfluvial populations spawn and rear in tributary streams like Trestle Creek, Lightning Creek, the Pack River, and Granite Creek, with older fish residing primarily in Lake Pend Oreille. Bull trout found in the Pend Oreille River may also originate from the Priest Lake and tributaries to the Priest River. Some of these bull trout have uniquely complex allacustrine migrations (i.e., spawning in streams that flow out of lakes; Dupont et al. 2007). These allacustrine bull trout spawn in East River drainage, a tributary of Priest River. Telemetry data showed these fish make complex post-spawning migrations downstream and then upstream either toward or into the Pend Oreille River and Lake Pend Oreille. Some of the fish returned to spawn the following spring (Dupont et al. 2007; R2

2010). Such multiple life history strategies help to maintain the stability and persistence of bull trout populations in the face of environmental change.

Upstream adult migrants move through the Pend Oreille River relatively quickly, but sub-adult fish may require more time and may be found closer to the water's edge (R2 2010). Bull trout then move through the Pend Oreille River during the fall storage drawdown and winter holding period when the water level goes from approximately 2,062 feet mean sea level (MSL) to elevations between 2,051 and 2,056 feet MSL. The Pend Oreille River does not serve as a primary spawning or rearing habitat for bull trout. If bull trout are present in the river, their occurrence is likely limited to the fall and winter months, as part of their broader migration between Lake Pend Oreille, Priest River, Priest Lake, and the associated spawning tributaries.

Water temperature above 59 degrees Fahrenheit (°F) tends to limit bull trout distribution and determines spawning seasons, egg incubation periods, and fry emergence (Fraley and Shepard 1989, Rieman and McIntyre 1995). Sub-adult and adult bull trout typically enter tributaries before temperatures exceed 61-65°F (Goetz 1989, 2016). Water temperatures in the Pend Oreille River usually exceed 65°F by early July and bull trout would normally have retreated to the cooler waters of tributaries to the Priest River or tributaries to Lake Pend Oreille.

Canada Lynx

Lynx may occasionally be present on USACE lands during dispersal periods. However, their preferred habitats consist of forests with deep snow cover and boreal characteristics, such as spruce and fir trees, typically found in high-elevation mountainous regions. The habitat types on USACE lands do not align with these preferences, making it highly unlikely for lynx to be found in the lower valley areas of Lake Pend Oreille and the Pend Oreille River.

Grizzly Bear

In recent years, grizzly bear populations in the Cabinet and Selkirk Mountains have grown, resulting in an increased frequency of bears dispersing in search of new territories. Grizzly bears have been observed in lower-elevation areas near USACE lands, particularly in the Pack River and Clark Fork River Delta, though there have been no reported sightings west of Sandpoint. Due to the developed nature of the surrounding landscape—characterized by roadways, residential areas, and

recreational activities such as camping and boating—and the high level of habitat fragmentation, grizzly bear presence on USACE lands would be considered a rare occurrence.

North American Wolverine

Wolverines are active year-round and are known for their wide-ranging movements, often traveling great distances in short periods. The species relies on persistent, stable snow cover, particularly during the reproductive denning period. Due to their low population densities and preference for remote, mountainous habitats, wolverines are difficult to detect. The exact number of wolverines inhabiting Idaho is unknown, though there have been four verified sightings in Bonner County, all within mountainous areas. One unverified sighting was reported in the Clark Fork River Delta. In general, wolverines tend to avoid human activity and roads, primarily inhabiting alpine regions above the tree line and forested landscapes. Given these habitat preferences, it is unlikely that wolverines are present on USACE lands.

Yellow-billed Cuckoo

No records exist of yellow-billed cuckoo in the project area. This species prefers forested riparian habitat areas. The most northern observations of the bird in Idaho occurred between 1984 and 1992 in Latah County, more than 120 miles from the AFD Project area (IFWIS 2020).

Whitebark Pine

Whitebark pine typically thrives in high-elevation, cold environments. Ecologically, it plays a critical role, as its seeds serve as an important food source for various wildlife, including birds, squirrels, and bears. Additionally, whitebark pine contributes to reducing avalanche risks and mitigating soil erosion. Given its preference for alpine habitats, whitebark pine is unlikely to be found on USACE lands in the lower elevation areas along Lake Pend Oreille and the Pend Oreille River.

Monarch Butterfly

The monarch butterfly has four distinct life stages: egg, larva (caterpillar), pupa (chrysalis), and adult. Adult monarch butterflies feed on the nectar of a wide variety of flowering plants. However, their caterpillars only eat the leaves of milkweed plants, and so these butterflies can only breed in areas where milkweed is present. Milkweed plants and monarch butterflies are observed on some USACE lands and so the species is present in the area.

Alternative 1: No Action Alternative

Under the No Action Alternative, routine operations and maintenance (O&M) activities, as well as any proposed small-scale construction, would continue. However, delays to scheduled work may occur as each action is evaluated for potential impacts to federally listed species. Alternative 1 would likely not improve conditions for fish and wildlife species, as it does not include the development of a vegetation management plan or an integrated pest management plan to address habitat-degrading invasive plant species, such as reed canarygrass. As a result, vegetated wetland areas would remain vulnerable to continued invasion and domination by reed canarygrass, which displaces native plant species. Reed canarygrass-dominated marshes have lower insect soil diversity compared to marshes with native vegetation, which affects the food availability for species like bull trout, which primarily feed on insects (Hansen and Castelle 1999; Beaulieu and Wheeler 2002). Additionally, the spread of reed canarygrass into nearshore waters would create more suitable habitat for invasive species like walleye and northern pike, further increasing the threat to bull trout populations.

Alternative 2: Updated Master Plan (Preferred Alternative)

Alternative 2 would enable greater efficiency and improved land management over a longer timeframe. Implementation of Alternative 2 would use additional analysis to make changes for anticipated impacts on fish and wildlife habitat in all project actions. The 2018 Master Plan EA and the 2023 AFD Invasive Aquatic Weeds Control Supplemental EA documented USACE's no effect determinations for all terrestrial ESA listed species or respective critical habitat in Table 1 and a no effect determination to Bull trout or their critical habitat for upland activities not impacting adjacent critical habitat. These previous analyses are incorporated by reference, and the updated Master Plan (Alternative 2) would not change those effects determinations (USACE 2018, USACE 2023).

Other activities included in Alternative 2 that may impact Bull trout or their critical habitat include bank stabilization, shoreline modification, installation/maintenance of in-water structures, and woody vegetation removal. Bull trout critical habitat is designated throughout the entire mainstem Pend Oreille River, Lake Pend Oreille, and most tributaries (Figure 2) within or adjacent to AFD project lands.

Bull Trout Critical Habitat

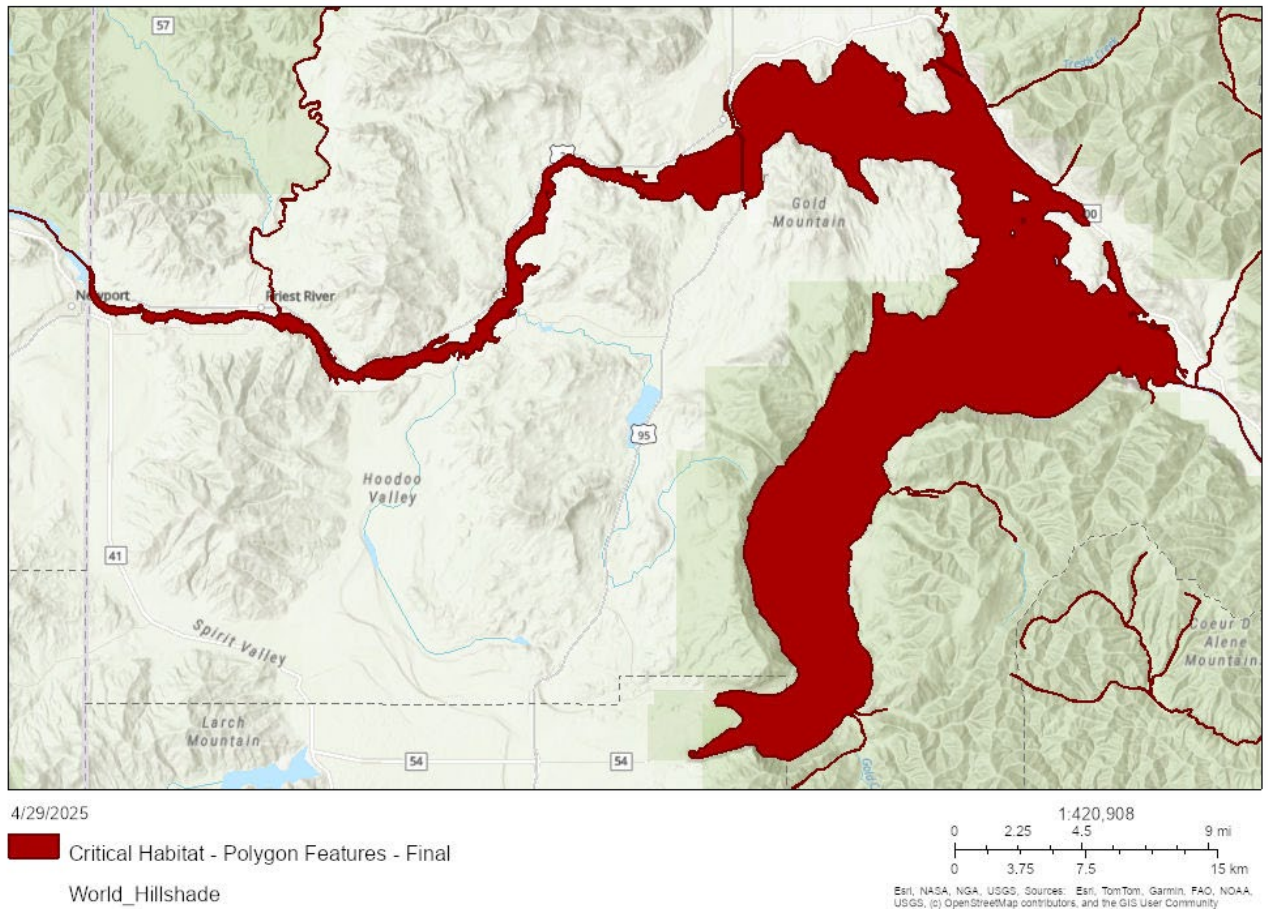


Figure 2. Waterbodies designated as bull trout critical habitat (red). Albeni Falls Dam is on the Pend Oreille River near Newport, Idaho, at the left of the figure.

Bull trout critical habitat is composed of nine primary constituent elements (PCEs). Of the nine PCEs, the following three could be adversely affected by activities included in Alternative 2:

- PCE 3: An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.
- PCE 4: Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments, with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.
- PCE 5: Water temperatures ranging from 36 to 59°F, with adequate thermal refugia available for temperatures that exceed the upper end of this range. Specific temperatures within this range will depend on

bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow; and local groundwater influence.

By implementing voluntary conservation measures and adhering to non-discretionary Biological Opinion terms and conditions, USACE has determined that projects carried out under the updated Master plan will have no more than minor individual and cumulative adverse effects to threatened and endangered species and their critical habitats. USACE determined that activities conducted in the updated Master Plan may affect, but not likely to adversely affect bull trout and their critical habitat. New bank stabilization projects that may adversely affect individual bull trout or bull trout critical habitat will undergo ESA consultation before being carried out, further ensuring that projects funded, authorized, or carried out by USACE do not jeopardize the continued existence of ESA-listed species or destroy or adversely modify their critical habitat.

3.7 Vegetation

Historic vegetation patterns in the Pend Oreille Subbasin were largely influenced by wildfire. Early accounts and photographs of the Subbasin indicate that old-growth stands of western red cedar and other species were common in riparian zones and floodplains. Large cedar stumps can still be found in many riparian areas along Subbasin streams. Uplands were typically dominated by forested seral species in various stages of succession, with age and composition dependent largely on fire cycles, elevation, slope, and aspect.

Low elevation riparian zones near tributary mouths include areas with and without tree canopy cover. Along stream corridors where tree overstory does not exist or is thin, vegetation includes shrubs and small trees such as thin-leaf alder; willows, snowberry, mountain maple, red-osier dogwood, blue elderberry, and black hawthorn. Where tree canopy is present, tree species include black cottonwood, water birch, quaking aspen, and a mix of conifer species including western red cedar, western hemlock, Douglas fir, grand fir, and western white pine. Lists of plant species potentially present on USACE lands are found in Attachment 1, Appendix C.

Alternative 1: No Action Alternative

Under the No Action Alternative, vegetation management would proceed

as outlined in the 2018 Master Plan. Routine operations and maintenance, conducted in accordance with BMPs, would result in only minor impacts to vegetation. However, future improvement actions may be limited by USACE policy. Adverse effects on vegetation, including degradation of existing site conditions, are anticipated. These impacts could, in turn, negatively affect wildlife and water quality.

Alternative 2: Updated Master Plan (Preferred Alternative)

With the adoption of the updated Master Plan, the potential impacts to vegetation from project O&M and visitor use would be comparable to those under the No Action Alternative. However, implementation of the updated Master Plan would include updating the comprehensive vegetation management plan. This plan would incorporate additional analyses to address anticipated impacts, such as those from increased visitation and other factors affecting the AFD Project, including the control of aquatic and terrestrial weeds. Through long-term, balanced planning, this alternative would be more effective in safeguarding vegetation and supporting fish and wildlife resources.

USACE attempts to avoid vegetation removal during new and maintenance bank stabilization work to minimize potential adverse effects on fish, wildlife, and water quality. However, bank stabilization work does occasionally require removal of shoreline vegetation for construction equipment access or site preparation. Whenever possible, USACE replants shoreline vegetation in areas where vegetation was removed to facilitate bank stabilization. While some vegetation will likely be removed during construction of new bank stabilization, USACE's overall policy of avoiding and minimizing vegetation removal and replanting areas where possible will ensure the adverse effects of bank stabilization projects on vegetation will be individually and cumulatively minor.

3.8 Wetlands

In general, functional wetlands along the Pend Oreille River and around Lake Pend Oreille, including the Clark Fork River Delta, have largely disappeared from elevations between 2,062.5 and 2,055 feet MSL due to the summer lake elevation maintained to 2,062.5 feet MSL for several months. The construction of AFD and subsequent operation resulted in a change from the natural lake elevations in spring and summer. Prior to the dam, the natural lake level would reach higher than 2,062.5 feet MSL, but

only for one or two weeks. The lake level would drop to approximately 2,056 feet MSL, submerging wetlands along the natural lake's edge due to reservoir operations. Since the construction of AFD, annual fluctuations in lake levels have contributed to shoreline erosion and the degradation of remaining wetlands. Wetlands that persist between 2,051 and 2,056 feet MSL are primarily lacustrine, littoral types. Native species typically found within this elevation range include Chara, northern watermilfoil, coontail, elodea, leafy pondweed, and other native pondweeds. Non-native species, such as curlyleaf pondweed and Eurasian watermilfoil, are also present. Flowering rush, another invasive species, is expanding in certain areas of the lake, particularly in the upper part of this elevation band. Reed canarygrass has spread widely over USACE lands, and in several areas has crowded out existing vegetation cover. Erosion around the lake has further exacerbated wetland loss. An erosion line often forms at the winter lake elevation, and as this erosion progresses, it may impact wetland types at higher elevations by undermining root systems.

Alternative 1: No Action Alternative

Under the No Action Alternative, invasive weed control in wetland areas would be managed solely by local entities, without the involvement of federal resources or expertise to support eradication efforts. Invasive species such as aquatic Eurasian watermilfoil and flowering rush, and terrestrial reed canarygrass, are highly aggressive and often outcompete or eliminate native vegetation. This dominance results in reduced biodiversity within wetland communities, ultimately diminishing the overall ecological health of the affected areas. The No Action Alternative would prevent effective control or eradication of these invasive species, hindering the restoration and flourishing of native plant species and reducing biodiversity within the project area.

Alternative 2: Updated Master Plan (Preferred Alternative)

One of the key recommendations from the updated Master Plan is to develop strategies for controlling, reducing, or eradicating invasive vegetation. AFD Project staff would continue researching, evaluating, and testing the most cost-effective and efficient methods for achieving eradication. The goal is to minimize the presence of invasive species while enhancing conditions for native aquatic vegetation. USACE anticipates that these efforts will lead to a shift in species composition, resulting in a greater abundance and diversity of native vegetation, thereby fostering a more biodiverse and resilient ecosystem.

3.9 Wildlife

The Lake Pend Oreille area is home to a diverse array of wildlife species, with seasonal fluctuations in both numbers and diversity due to the presence of large populations of migratory species. Surveys conducted by Boise State University in partnership with USACE have recorded over 120 species in the region (Carlisle et al. 2015), including a wide range of waterfowl, passerines, raptors, wading birds, shorebirds, and upland game birds. In addition to avian species, USACE lands support a variety of small and large mammals. Carnivores such as coyote, fox, lynx, and badger are found in the forested areas surrounding the lake, while smaller mammals like beaver, river otter, muskrat, marmot, and mink inhabit the area. Larger mammals, including black bear, elk, moose, mule deer, and white-tailed deer, are also present, with sparse populations of grizzly bear and mountain lion in the region. A full species list, including both common and scientific names, can be found in Attachment 1, Appendix C.

USACE directly manages wildlife habitats in recreational areas, while the IDFG manages habitats on USACE lands within Wildlife Management Areas (WMAs). Wildlife across the state of Idaho is generally managed by IDFG. A variety of natural and human-induced factors impact wildlife populations in the region. For example, heavy human activity can displace certain species, while harsh winters and predation may significantly affect others. USACE's management approach aims to support the success of multiple species by maintaining and improving habitat conditions.

The current vegetation structure on USACE lands provides habitat for a range of wildlife, although it may not fully meet the needs of all species. Ongoing impacts to wildlife are primarily the result of conflicting land uses, particularly informal motorized recreation in environmentally sensitive areas. While most wildlife tends to avoid high-density recreational zones, some may still encounter human activity in lower-density areas. Regardless of the alternative selected, all habitats will continue to be protected under USACE management.

Alternative 1: No Action Alternative

Under Alternative 1, wildlife populations would naturally adapt to changes in habitat, the operation of recreational areas, and human activity. Routine O&M of facilities, as well as management of natural and historic properties using BMPs, would not result in adverse impacts to wildlife species.

However, increased human presence associated with higher visitation levels would likely have negative effects on wildlife and their habitats. The anticipated rise in visitation could lead to wildlife displacement, with animals potentially relocating to alternative habitats outside the project area.

Alternative 2: Updated Master Plan (Preferred Alternative)

The updated Master Plan indicates that the potential impacts to wildlife resources at the AFD Project, arising from facility O&M, visitor use, or the management of natural and historic properties, would be similar to those identified in Alternative 1. However, the Proposed Master Plan incorporates additional analysis to address the anticipated effects of increased visitation. By employing a long-term, balanced planning approach, this alternative is expected to be more effective in safeguarding wildlife resources.

Potentially increased recreational visitor presence and expanded use of AFD lands may discourage wildlife use and presence in or near recreation areas. As development needs of areas would not dramatically expand visitor numbers (by a magnitude), increased human presence is not expected to have significant adverse effects as resident wildlife is likely habituated to human activities.

3.10 Social, Economic, and Recreational Resources

AFD is located in Bonner County, Idaho. The incorporated communities of Sandpoint, Ponderay, Kootenai, Hope, and Clark Fork are located adjacent to the lake. Priest River is located along the Pend Oreille River upstream of AFD. Sandpoint is the largest city in Bonner County with a 2024 population of 10,455, growing at 4.3 percent annually from 2022 through 2024 (World Population Review 2024). Bonner County's population was 51,414 in 2022. The County grew by about 1.1 percent annually from 2018 through 2022. The other incorporated communities' populations for 2022 were Ponderay with 1,601 residents, Kootenai with 1,037 residents, Hope with 105 residents, and Clark Fork with 551 residents (U.S. Census Bureau 2022).

Immediately downstream of AFD is the town of Oldtown in Bonner County, Idaho and the towns of Newport, Cusick, Lone, Usk, and Metaline Falls are in Pend Oreille County, Washington. Some of these towns are located within the Kalispel Indian Reservation. Newport is the largest of the towns, with a population of 2,202 in 2022 (U.S. Census Bureau 2022). It grew at

an annual average rate of 0.7 percent from 2018 to 2022. Pend Oreille County's population was 13,100 in 2010. The County grew by 1.2 percent annually from 2000 through 2010. The other incorporated communities' populations for 2022 were Cusick with 159 residents, Lone with 447 residents, and Metaline Falls with 289 residents.

Lake Pend Oreille and the Pend Oreille River are recreation destinations for boaters, fishers, hunters, and other recreationists on a year-round basis. Warm weather activities include boating, fishing, swimming, and kayaking. Based on an IDFG survey in 2003, Lake Pend Oreille was the most popular destination for fishing trips in Bonner County, with 60,297 trips and expenditures of \$29.6 million (2023 dollars) (Grunder et al. 2008). Average expenditures per trip was \$490 (2023 dollars). Cold weather activities include ice fishing, ice skating, and various hunting activities. Popular ice fishing spots are located around the lake including a spot north of Sandpoint and another near Sunnyside (Brady 2010). Approximately 100 to 200 fishermen participate in ice fishing near Sandpoint. Waterfowl hunting on and near Lake Pend Oreille and the Pend Oreille River is popular in the fall. Both motorboats and sailboats are commonly used on the lake. Some boat owners store their boats in the water year-round. Boat ramps are available for launching boats in several locations both on the lake and on the river when the lake and river are ice-free. Lake elevations affect accessibility of boat ramps, and usability of docks; many dock platforms are fixed above high pool elevation and are thus well above water when the lake is drawn down.

Alternative 1: No Action Alternative

Under the no-action alternative, with no control measures in place, the infestation of aquatic weeds is expected to spread, particularly in nearshore areas frequented by the public. Species such as flowering rush and Eurasian watermilfoil would reduce the quality and enjoyment of recreational activities, including angling, boating, swimming, water skiing, and other nearshore recreation. These invasive plants can clog boat propellers and create an unpleasant swimming experience, as they tend to entangle swimmers' limbs. Over time, these impacts could have economic consequences, negatively affecting the tourism and recreational industries. However, the no-action alternative would not result in changes to local wages or population characteristics in the project area.

Alternative 2: Updated Master Plan (Preferred Alternative)

Under Alternative 2, the proposed weed control treatment program is

expected to effectively manage invasive plant infestations and potentially eradicate many of the targeted species. By reducing or eliminating aquatic weeds, the risk of boat propeller entanglement would be minimized, swimming conditions would improve, and fishery resources would benefit, resulting in a more favorable environment for recreational activities in nearshore areas. While recreational opportunities may experience temporary disruptions during herbicide application or mechanical treatments, the long-term impact on public access would be minimal. Appropriate signage and notifications would be placed in treatment areas to alert swimmers, boaters, and anglers to potential chemical exposure. There are no fishing restrictions associated with any of the chemicals proposed for use in this action.

Any adverse impacts on recreation due to the weed control measures would be minor to moderate, depending on the location and the number of people affected. Many of the planned improvements are designed to enhance recreational access and user experience, potentially attracting greater volumes of local and regional visitors. While this increase in recreational use could benefit local businesses, it may also lead to greater strain on public infrastructure and potential degradation of facilities.

3.11 Historic Properties

Historical and Archaeological Resources Management at Albeni Falls Dam

Historical and archaeological resources include sites, structures, objects, and Historic Properties of Religious and Cultural Significance (HPRCSIT) that reflect both precontact and historic human habitation, as well as traditional knowledge and practices. These historic properties are non-renewable, making their preservation a priority. The Albeni Falls Dam (AFD) project area is home to numerous recorded archaeological and historic sites, spanning federal, state, and private lands. Four key districts are located within the project area: the Albeni Falls Dam Historic District, the Lake Pend Oreille Lime and Cement Industry Historic District, the East Pend Oreille Rock Art District, and the Upper Pend Oreille River Archaeological District.

The Seattle District and Albeni Falls Dam Historic Properties management staff are dedicated to preserving and protecting these historical and archaeological resources that are spread across all areas outlined in the

Master Plan. AFD has an assigned Secretary of Interior (SOI) qualified archaeologist (Project Archaeologist) who adheres to the policies and procedures outlined in three primary legal agreements. The most frequently consulted agreement is the AFD Historic Properties Management Plan (HPMP). This strategic document is essential for managing and protecting historic properties by establishing the necessary policies, procedures, and actions to ensure legal compliance with the National Historic Preservation Act (NHPA). The HPMP provides outlined procedures on inventory and assessment, legal compliance, preservation strategies, management goals and objectives, public engagement and education, monitoring and evaluation, funding and resources, and emergency management. The HPMP ensures effect management and protection of Historic Properties, balancing O&M needs with preservation goals.

The second agreement is the Federal Columbia River Power System (FCRPS) *Systemwide Programmatic Agreement for the Management of Historic Properties Affected by the Multipurpose Operations of Fourteen Projects of the FCRPS (SWPA)*. The SWPA provides a comprehensive framework for managing historic properties impacted by the operations and maintenance of the FCRPS projects. It outlines the responsibilities and procedures for compliance with the NHPA. The AFD HPMP acts as a specific operational plan that fulfills the broader commitments outlined in the SWPA, ensuring that the management of historic properties affected by the FCRPS is comprehensive, compliant, and collaborative.

The HPMP and SWPA fit into the framework of compliance with the NHPA as outlined in 36 CFR §800, the third agreement the Project Archaeologist will follow. This regulation establishes the procedures federal agencies must follow to consider the effects of their actions on historic properties. It includes requirements for identification, evaluation, consultation, and resolution of adverse effects. The Project Archaeologist follows these regulatory steps, ensuring compliance with the NHPA while effectively adhering to the policies and procedures provided by the SWPA and the HPMP. This structured approach promotes the protection of historic properties affected by federal undertakings and fosters collaboration among stakeholders throughout the process.

The Project Archaeologist will consult the four AFD affected Tribes, other federal and state agencies, and the Idaho State Historic Preservation

Office to ensure best practices for identifying, evaluating, and safeguarding resources important to the public. Stakeholder involvement is a critical component in the successful management of historic properties.

The Project Archaeologist has identified common threats to these resources, including landscape modifications, erosion, vandalism, and artifact collecting. In recent years, an increase in recreational activities, visitors, and pedestrian traffic have contributed significantly to the damage and loss of these resources.

Through the FCRPS Cultural Resources Program, AFD has its own Cooperating Group. The purpose of the Cooperating Group is to facilitate the exchange of views, technical information, and planning advice relating to compliance with the NHPA. Communications in the Cooperating Group also aid work planning, prioritization, and phasing of compliance activities. Discussions facilitate, but do not replace, Government to Government consultation.

The Cooperating Group works cooperatively to preserve, protect, and manage historic properties. USACE and BPA intend that the Cooperating Group's official approach and preferred methods for historic properties management will be a major consideration in the management and implementation of the FCRPS Cultural Resource Program. The agencies retain authority and responsibility for making decisions regarding implementation of Section 106 of the NHPA and the FCRPS SWPA.

The Cooperating Group provides professional expertise and local knowledge regarding planning and management of priorities in relation to the agencies' implementation of Section 106 of the NHPA and Section 3 of NAGPRA. Additionally, the Cooperating Group helps the agencies identify historic and traditional properties and determine the appropriate treatment, budget proposals, and timing of implementation, as well as review technical reports, documents, site forms, and participate in planning meetings, on-site field inspections, and other duties as required to implement the SWPA. Furthermore, the Cooperating Group recommends funding priorities using the annual budget and level of effort for work activities and provides professional and local expertise prior to the USACE drafting contract statements of work (SOW). Finally, the Cooperating Group recommends agreements, plans, and actions for the management of the impacts to historic properties resulting from O&M at AFD.

Built Environment

In addition to its archaeological sites, AFD contains several recreational areas, buildings, and structures, many of which are over 50 years old and have been evaluated as historic properties. The most significant built-environment structure in the area is the Albeni Falls Dam Historic District (AFDHD) which was determined eligible for inclusion in the National Register of Historic Places (NRHP) in 2015. AFDHD is eligible under NRHP criterion A for its significant impact on local and regional economics, specifically recreation and tourism. AFDHD is eligible under NRHP criterion C as a modest but representative example of mid-twentieth century modernism. AFDHD is eligible under NRHP criterion D for the potential to reveal information about the history of the Idaho Lime Company. Contributing resources to the district are the dam, powerhouse, log chute, three-bay garage, and transformer/switchyard.

Many of the recreational areas also contain structures older than 50 years, such as restrooms, pump houses, picnic shelters, and storage buildings. Over the next several years, these recreational areas will be systematically recorded as historic sites and individually assessed for eligibility to the National Register of Historic Places.

Alternative 1: No Action Alternative

Under the No Action Alternative, historic properties would continue to be managed under the SWPA. In accordance with the SWPA, each routine operations and maintenance of facilities action would be evaluated to determine if the action would have an adverse effect on historic properties and further Section 106 review and consultation would occur if necessary. The Albeni Falls Dam historic properties program adheres to a HPMP, which provides procedures and guidance for managing historical and archaeological sites. The Project Archaeologist will refer to the HPMP as necessary. At the time this Master Plan is being implemented, the Project Archaeologist is revising the 2008 HPMP.

Alternative 2: Updated Master Plan (Preferred Alternative)

Under the Updated Master Plan alternative, historic properties would continue to be managed under the SWPA. In accordance with the SWPA, each routine operations and maintenance of facilities action would be evaluated to determine if the action would have an adverse effect on historic properties and HPRCSITs and further Section 106 review consultation would occur if necessary. The Albeni Falls Dam historic

properties program adheres to a HPMP, which provides procedures and guidance for managing historical and archaeological sites. The Project Archaeologist will refer to the HPMP as necessary. The HPMP is designed to be a working document, subject to revision as additional information becomes available. The HPMP should be reviewed, and pertinent parts should be updated as necessary every five years or when the database or Project conditions change significantly. At the time this Master Plan is being implemented, the Project Archaeologist is revising the 2008 HPMP.

4 Mitigation

As outlined in 40 CFR § 1508.1(y)(1-5) under NEPA, mitigation means “measures that avoid, minimize, or compensate for adverse effects caused by a proposed action or alternatives as described in an environmental document or record of decision and that have a nexus to those effects. While NEPA requires consideration of mitigation, it does not mandate the form or adoption of any mitigation. Per 40 CFR § 1508.1(y)(1-5) under NEPA, “Mitigation includes, in general order of priority:

1. Avoiding the adverse effect altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.”

Under the preferred alternative, no compensatory mitigation is required for implementing the Master Plan. USACE will employ Best Management Practices (BMPs) to avoid, minimize, rectify, and reduce impacts of operations. The BMPs are listed in Attachment 1, Appendix D of the updated Master Plan.

5 Cumulative Effects

The CEQ regulations implementing NEPA define cumulative effects as the

“effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant effects taking place over a period of time” (40 CFR §1508.1(i)(3)).

Numerous cumulative effects have occurred in the project area from construction of Albeni Falls Dam and from the changes in the water behind it. The hydrology of Pend Oreille, Priest, Pack, and Clark Fork Rivers was altered, the dam and reservoirs displaced natural vegetation, and human presence and construction impacted resident and migratory species. Archaeological sites and historic properties were unearthed and disturbed during the construction as well. These anthropogenic changes have caused cumulative adverse effects to fish, wildlife, and vegetative communities.

Continued recreation and project upkeep at the facilities would have ongoing minor adverse impacts on fish and wildlife in the immediate area. Construction and maintenance activities would temporarily create noise and dust in the area and could temporarily displace wildlife. Continued upkeep of the area, especially in the High-Density Recreation Areas, would provide ongoing benefits to recreationalists. USACE staff will evaluate the construction of any new projects under NEPA to determine if they are categorically excluded from further analysis or if they require a new NEPA analysis to determine their impact on the environment. Site-specific proposals for construction will also be offered to the Tribes for consultation, in accordance with the PA, and will be approved only if it is determined that potential impacts are not significant. USACE and non-Federal lessees will manage recreation areas and WMAs in accordance with pertinent environmental laws, which will reduce some of the impacts human disturbance has on wildlife and vegetation in the area.

Future construction activities within the private sector also affect the environment in the Pend Oreille Lake and River area. As lakeside homes, for primary or secondary residences continue to be in high demand, it is anticipated that any undeveloped private land could be developed. This future development would have a negative effect on the habitat for fish and wildlife species but would be considered a positive effect for the local economy.

The effects of wind waves and boat wake are expected to continue to

cause shoreline erosion issues for all waterside recreation areas, WMAs, residences, and businesses. To combat erosion, private and public bank-hardening projects are likely to increase.

6 Coordination

The following agencies and entities have been involved with the environmental coordination of the proposed project:

- Bonner County Parks and Waterways Committee
- Confederated Salish and Kootenai Tribes
- Cœur d'Alene Tribe
- Idaho Department of Environmental Quality
- Idaho Department of Fish and Game
- Idaho State Historic Preservation Office
- Kalispel Tribe of Indians
- Kootenai Tribe of Idaho
- Pend Oreille Basin Commission
- U.S. Fish and Wildlife Service

USACE is publishing this Draft EA and Draft Finding of No Significant Impacts (FONSI) for the proposed project for a 30-day public review and comment period. All comments received within the comment period will be considered for whether changes should be made to the selected alternative or if no action should be taken.

7 Environmental Compliance

This Environmental Assessment (EA) is being prepared pursuant to Sec. 102(C) of the National Environmental Policy Act (NEPA), and includes compliance with other laws, regulations, and Executive Orders as discussed below.

7.1 American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996) establishes protection and preservation of Native Americans' rights of freedom of belief, expression, and exercise of traditional religions. Courts have interpreted the Act to mean that public officials must consider Native Americans' interests before undertaking actions that might impact their religious practices, including impact on sacred sites. Implementing the

updated Master Plan would not adversely affect the protections provided by this Act. A notice requesting attendance to a public meeting and commentary for the updated Master Plan on June 7, 2024, which was held from June 24-25, 2024. A notice that the EA would be posted for public comment was sent to the Tribes on December 31, 2024, and January 2, 2025. To date, USACE has not received comments from any of the contacted Tribes.

7.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940, as Amended (16 U.S.C. § 668-668d) prohibits the taking, possession or commerce of bald and golden eagles, except under certain circumstances. Based on observations reported in the Global Biodiversity Information Facility (October 2024), 617 bald eagle and 42 golden eagle observations have been reported around the project area of (GBIF.org, 2024a). Implementation of the updated Master Plan would not adversely affect bald or golden eagles or their habitat as the activities are not substantially different than current activities in respect to the effects on bald or golden eagles or their habitat.

7.3 Clean Air Act

The Clean Air Act of 1972, as amended (42 U.S.C. § 7401 et seq.) prohibits Federal agencies from approving any action that does not conform to an approved State or Federal implementation plan. The operation of heavy equipment, removal and placement of rock, and the operation of vehicles during construction would result in increased vehicle emissions and a slight increase in fugitive dust. These effects would be localized and temporary. The project area is not located within a non-attainment area (Ecology 2024c). USACE has determined that the combination of emissions of the proposed repairs constitutes a routine facility repair generating an increase in emissions that is clearly *de minimis* (Table 4), and thus a conformity determination is not required, pursuant to 40 C.F.R. 93.153 (c)(2)(iv).

7.4 Clean Water Act Federal Water Pollution Control Act

The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.) is more commonly referred to as the Clean Water Act (CWA). This act is the primary legislative vehicle for Federal water pollution control programs and the basic structure for regulating discharges of pollutants into waters of the U.S. The CWA was established to “restore and maintain the chemical,

physical, and biological integrity of the nation's waters." The CWA sets goals to eliminate discharges of pollutants into navigable waters, protect fish and wildlife, and prohibit the discharge of toxic pollutants in quantities that could adversely affect the environment.

This EA includes evaluations of possible impacts to water quality, primarily with respect to suspended solids, turbidity, and temperature. Three sections of the CWA are pertinent to the proposed actions: Section 401 covers water quality standards and evaluation of the effects discharges would have on those standards; Section 402 addresses non-point discharges including, but not limited to stormwater runoff from construction sites. Section 402 also applies when a construction site would have greater than one acre of ground disturbance. Section 404 addresses discharge of fill into Waters of the U.S. If applicable, the requirements of the three CWA sections are briefly discussed below.

USACE is responsible for administration of Section 404 of the CWA. USACE does not issue Section 404 permits to itself for its own civil works activities, but USACE accepts responsibility for the compliance of its civil works projects with Sections 404 under the CWA for jurisdictional activity. Pursuant to CWA Section 404(f)(1)(B), "[T]he discharge of dredged or fill material . . . for the purpose of maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, and bridge abutments or approaches, and transportation structures...is not prohibited by or otherwise subject to regulation under this section..." Pursuant to 33 U.S.C. 323.4(a)(2), the implementing definition of "maintenance" includes "[E]mergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design. Emergency reconstruction must occur within a reasonable period of time after damage occurs in order to qualify for this exemption."

USACE anticipates that periodic bank stabilization repair measures along the shoreline will meet the requirements of the CWA Section 404(f)(1)(B) exemption or NWP 3 and the associated general WQC (IDEQ 2020). If those requirements cannot be met, compliance will be achieved via other pathways (e.g., NWP 13) and may require a WQC from IDEQ. Effects of herbicide applications in the aquatic environment were described in an EA

published in 2023 (USACE 2023). USACE has determined that this project is in compliance with the CWA.

7.5 Endangered Species Act

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species and their critical habitats.

USACE evaluated potential effects to endangered species in a Biological Assessment (BA) and will consult with USFWS prior to release of the final EA and FONSI. The BA contained an evaluation of effects of the proposed project on ESA-listed species and their critical habitat. In the BA, USACE provided determinations for ESA-listed species and their critical habitat. USACE made a determination of no effect to Canada lynx, grizzly bear, North American wolverine, primarily due to specialized habitat requirements not present in the project action area, lack of tolerance for human activity, or both. Whitebark pine and the yellow-billed cuckoo are not expected to be found on USACE lands. USACE determined that with adopted conservation measures and BMPs, as well as limited suitable habitat, the action is not likely to jeopardize the continued existence of the Monarch butterfly or Suckley's Cuckoo Bumble Bee. All USACE lands occur in low-lying areas along the lake, and near major roads, rail lines, and urban areas with frequent human activity.

The determination of may affect, but not likely to adversely affect bull trout and their designated critical habitat was made for the proposed activities within the updated Master Plan. Activities such as shoreline stabilization, beach nourishment, dock and pier maintenance, water access maintenance, piling replacement, and irrigation would be conducted with associated conservation measures that minimize or avoid interactions with bull trout or their designated critical habitat. If impacts from a specific or new project have not been evaluated, then that project would be analyzed and a separate Section 7 consultation will be completed with the USFWS prior to construction, as necessary.

7.6 Migratory Bird Treaty act of 1918 and Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

The Migratory Bird Treaty Act (16 U.S.C. § 703-712) as amended protects over 800 bird species and their habitat and commits that the U.S. will take

measures to protect identified ecosystems of special importance to migratory birds against pollution, detrimental alterations, and other environmental degradations. EO 13186 directs Federal agencies to evaluate the effects of their actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative effects to migratory birds.

A wide variety of species listed under the MBTA occur on USACE-managed lands within the action area. There will be no take of migratory birds as a result of this action, nor will this action conflict with the purpose of MBTA or EO 13186. Therefore, adoption of the proposed Master Plan would be in compliance with the MBTA and EO 13186.

7.7 National Environmental Policy Act

NEPA (42 U.S.C. § 4321 et seq.) commits Federal agencies to considering, documenting, and publicly disclosing the environmental effects of their actions. It requires that an EIS be included when a recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. Major Federal actions determined not likely to have significant adverse effects on the quality of the human environment may be evaluated through an EA.

This draft EA evaluates the potential effects of Alternatives 1 and 2 on the human environment. Alternative 2, updating the AFD Master Plan, is USACE's preferred alternative.

This draft EA/FONSI is made available for public review and comment. USACE invites submission of comments on the environmental impact of the proposed action. USACE will consider all submissions received during the comment period. The nature or scope of the proposal may be changed upon consideration of the comments received and this EA updated. If significant effects on the quality of the human environment are identified and cannot be mitigated for, USACE would initiate an EIS and afford all the appropriate public participation opportunities attendant to an EIS.

7.8 National Historic Preservation Act of 1966

Section 106 (54 U.S.C. § 306108) of the NHPA (54 U.S.C. § 300101) requires that Federal agencies evaluate the effects of Federal undertakings on historical, archeological, and historic properties and afford the Advisory Council on Historic Preservation opportunities to comment on the proposed undertaking if there is an adverse effect to an eligible

Historic Property. The lead agency must examine whether feasible alternatives exist that avoid adverse effects to eligible historic properties. If an effect cannot reasonably be avoided, measures must be taken to minimize or mitigate potential adverse effects.

7.9 Native American Tribal Treaty Rights & Tribal Consultation under EO 13175, Consultation and Coordination with Indian Tribal Governments

The United States has a unique, legally affirmed Nation-to-Nation relationship with American Indians and Alaska Native Tribal Nations, which is recognized under the Constitution of the United States, treaties, statutes, EOs, and court decisions. The United States recognizes the right of Tribal Governments to self-govern and supports Tribal sovereignty and self-determination. The United States also has a unique trust relationship with and responsibility to protect and support Tribal Nations.

Between 1778 and 1871, the United States entered into about 400 treaties with various Indian Nations on a Government-to-Government basis. Under the United States Constitution, treaties are accorded precedence equal to Federal law. Treaty rights are binding on all Federal and state agencies, and take precedence over State constitutions, laws, and judicial decisions. Treaty terms, and the rights arising from them, cannot be rescinded or cancelled without explicit and specific evidence of Congressional intent – indicating that Congress was aware of the conflict between its intended action on the one hand and Indian treaty rights on the other, and chose to resolve the conflict by abrogating the treaty. A right enumerated in a treaty ratified by the Senate may only be superseded by a subsequent act of Congress.

USACE has a trust policy to consult with, and consider views of, federally recognized American Indian Tribes when proposing an action that may have the potential to significantly affect Tribal rights, resources, and lands; including, but not limited to the impact of the proposed activity on Tribal reserved treaty rights. See Department of Defense Instruction (DODI) 4710.02, Section 3, Subject: DOD Interactions with Federally Recognized Tribes (September 24, 2018). In addressing these important obligations, USACE adheres to the principles articulated in the DOD Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty and Reserved Rights (November 2021):

“Under the U.S. Constitution, treaties are part of the supreme law of the land, with the same legal force and effect as Federal statutes. Pursuant to

this principle, and its trust relationship with federally recognized Tribes, the United States has an obligation to honor the rights reserved through treaties, including rights to both on and, where applicable, off-reservation resources, and to ensure that its actions are consistent with those rights and their attendant protections.”

Trust responsibilities ensuring USACE is fulfilling its Federal responsibilities and addressing Tribal concerns related to protected Tribal resources, Tribal rights or Indian lands are outlined in several documents:

- USACE Tribal Consultation Policy, November 2012;
- USACE Tribal Policy Principles, May 2010;
- Department of Army American Indian and Alaska Native Policy, October 2012; and
- Department of Defense American Indian and Alaska Native Policy, January 2012.

Four Native American Tribes have significant historic and contemporary interest in the resources in the project area: the Kalispel Tribe of Indians, Confederated Salish and Kootenai Tribes, Kootenai Tribe of Idaho, and Coeur d’Alene Tribe. A notice requesting attendance to a public meeting and commentary for the updated Master Plan on June 7, 2024, which was held from June 24-25, 2024. A notice that the EA would be posted for public comment was sent to the Tribes on December 31, 2024, and January 2, 2025. To date, USACE has not received comments from any of the contacted Tribes.

7.10 Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (25 U.S. C. § 3001-131; 104 Stat. 3042) provides for the protection of Native American and Native Hawaiian cultural items. It establishes a process for the authorized removal of human remains, funerary, sacred, and other objects of cultural patrimony from sites located on land owned or controlled by the Federal Government. The Act requires Federal agencies and federally assisted museums to return specified Native American cultural items to the federally recognized Indian tribes or Native Hawaiian groups to which they are associated. In the event of inadvertent discoveries of human remains, artifacts, and funerary objects, USACE would follow the terms of the NAGPRA regulations (43 CFR 10 et seq.).

7.11 Executive Order 11988 Floodplain Management

EO 11988 requires Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The actions identified in the proposed Master Plan revision would not affect the flood holding capacity or flood surface profiles of Priest River, Clark Fork River, Lake Pend Oreille, or the Pend Oreille River, nor would the facilitate floodplain development.

7.12 Executive Order 11990 Protection of Wetlands

EO 11990 encourages Federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. A detailed review of specific actions will be completed to ensure wetland values and functions will not be affected. The proposed action does not conflict with the requirements of the EO.

7.13 Executive Order 13007 Native American Sacred Sites

EO 13007, Native American Sacred Sites, directs Federal agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners. Agencies are to avoid adversely affecting the physical integrity of such sacred sites and to maintain the confidentiality of sacred sites when appropriate. The act encourages government-to-government consultation with Tribes concerning sacred sites. Some sacred sites may qualify as historic properties under the NHPA.

7.14 Executive Order 13175 Consultation and Coordination with Indian Tribal Governments

EO 13175 (6 November 2000) reaffirmed the Federal Government's commitment to a government-to-government relationship with Indian Tribes and directed Federal agencies to establish procedures to consult and collaborate with Tribal governments when new agency regulations would have Tribal implications. USACE has a government-to-government consultation policy to facilitate the interchange between decision makers to obtain mutually acceptable decisions. In accordance with this EO, USACE has engaged in regular and meaningful consultation and collaboration with the federally recognized Tribes surrounding the project area.

8 Summary of Assessment

The No Action Alternative does not meet the project's purpose and need. The Preferred Alternative fulfills the project's purpose and need by maintaining and improving USACE lands and facilities. Based on the analysis above, USACE does not expect the proposed Updated Master Plan to constitute a major Federal action significantly affecting the quality of the human environment, and therefore would not require preparation of an EIS. Public comments are invited on this draft EA and will be considered prior to the finalization of this EA and FONSI.

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10 Appendix A: Air Quality

No Action Alternative					Sum (MT)							
Equipment Type	HP	Amount	Hours or miles/day	Days	ROG	CO	NOX	SOX	PM	CO2	CH4	N2O
Chainsaw	2	2	8	104	0.09	0.25	0.00	0.00	0.00	1.33	0.00	0.00
Chainsaw	5	2	8	104	0.07	0.32	0.00	0.00	0.00	1.73	0.00	0.00
Chippers/Stump Grinders	15	1	8	104	0.02	1.10	0.01	0.00	0.00	2.74	0.00	0.00
Leaf Blowers/Vacuums 4-stroke	5	2	8	104	0.03	1.81	0.01	0.00	0.00	3.49	0.00	0.00
Rear Engine Riding Mowers	25	1	8	104	0.02	1.93	0.01	0.00	0.00	4.45	0.00	0.00
Pressure Washer	15	1	8	104	0.00	0.01	0.02	0.00	0.00	1.85	0.00	0.00
Excavator	120	1	8	104	0.03	0.19	0.17	0.00	0.01	27.78	0.00	0.00
Off-Highway Truck	175	1	8	104	0.04	0.28	0.22	0.00	0.01	47.21	0.00	0.00
Trimmers/Edgers/Brush Cutters 2-stroke	5	1	8	104	0.05	0.20	0.00	0.00	0.00	1.57	0.00	0.00
Tractor/Loader/Backhoe	120	1	8	104	0.02	0.13	0.11	0.00	0.01	19.52	0.00	0.00
Sedan HEV	141	2	100	100	0.00	0.01	0.00	0.00	0.00	2.83	0.00	0.00
Sedan HEV	141	2	75	160	0.00	0.01	0.00	0.00	0.00	3.40	0.00	0.00
Pickup Truck	450	4	100	100	0.00	0.03	0.00	0.00	0.00	16.61	0.00	0.00
Pickup Truck	450	4	75	160	0.00	0.03	0.00	0.00	0.00	19.93	0.00	0.00
SUV	235	2	100	100	0.00	0.01	0.00	0.00	0.00	6.12	0.00	0.00
SUV	235	2	75	160	0.00	0.01	0.00	0.00	0.00	7.35	0.00	0.00
Total emissions (MT) by pollutant					ROG	CO	NOX	SOX	PM	CO2	CH4	N2O
Total CO2 eq (MT) by pollutant					0.36	6.33	0.55	0.00	0.03	167.91	0.02	0.02
Total CO2 eq (MT)										167.91	0.61	4.91

Preferred Alternative					Sum (MT)							
Equipment Type	HP	Amount	Hours or miles/day	Days	ROG	CO	NOX	SOX	PM	CO2	CH4	N2O
Chainsaw	2	2	8	104	0.09	0.25	0.00	0.00	0.00	1.33	0.00	0.00
Chainsaw	5	2	8	104	0.07	0.32	0.00	0.00	0.00	1.73	0.00	0.00
Chippers/Stump Grinders	15	1	8	104	0.02	1.10	0.01	0.00	0.00	2.74	0.00	0.00
Leaf Blowers/Vacuums 4-stroke	5	2	8	104	0.03	1.81	0.01	0.00	0.00	3.49	0.00	0.00
Rear Engine Riding Mowers	25	1	8	104	0.02	1.93	0.01	0.00	0.00	4.45	0.00	0.00
Pressure Washer	15	1	8	104	0.00	0.01	0.02	0.00	0.00	1.85	0.00	0.00
Excavator	120	2	8	104	0.05	0.38	0.33	0.00	0.02	55.57	0.00	0.00
Off-Highway Truck	175	2	8	104	0.07	0.57	0.45	0.00	0.02	94.41	0.01	0.01
Trimmers/Edgers/Brush Cutters 2-stroke	5	1	8	104	0.05	0.20	0.00	0.00	0.00	1.57	0.00	0.00
Tractor/Loader/Backhoe	120	2	8	104	0.03	0.26	0.22	0.00	0.01	39.04	0.00	0.00
Cement and Mortar Mixer	15	1	8	45	0.00	0.01	0.01	0.00	0.00	1.03	0.00	0.00
Paving Equipment	50	1	8	45	0.01	0.04	0.04	0.00	0.00	3.91	0.00	0.00
Skid Steer Loader	50	2	8	60	0.01	0.09	0.08	0.00	0.00	11.11	0.00	0.00
Sedan HEV	141	2	100	100	0.00	0.01	0.00	0.00	0.00	2.83	0.00	0.00
Sedan HEV	141	2	75	160	0.00	0.01	0.00	0.00	0.00	3.40	0.00	0.00
Pickup Truck	450	4	100	145	0.00	0.04	0.00	0.00	0.00	24.08	0.00	0.00
Pickup Truck	450	4	75	160	0.00	0.03	0.00	0.00	0.00	19.93	0.00	0.00
SUV	235	2	100	100	0.00	0.01	0.00	0.00	0.00	6.12	0.00	0.00
SUV	235	2	75	160	0.00	0.01	0.00	0.00	0.00	7.35	0.00	0.00
Total emissions (MT) by pollutant					ROG	CO	NOX	SOX	PM	CO2	CH4	N2O
Total CO2 eq (MT) by pollutant					0.47	7.08	1.18	0.00	0.07	285.94	0.03	0.03
Total CO2 eq (MT)										285.94	0.90	7.33

11 Attachment A: Albeni Falls Dam Master Plan

ALBENI FALLS DAM PROJECT MASTER PLAN

BONNER COUNTY, IDAHO



January 2026



**US Army Corps
of Engineers®**
Seattle District

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Albeni Falls Dam Project Master Plan

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Appendix B –Invasive Species

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Concern

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Appendix E – Hazard Trees

Appendix F – Pertinent Public Laws, Policies, and Procedures

Appendix G – Seaplane Operations at Civil Works Water Resource Development Projects

Acronyms and Abbreviations

ADA	Americans with Disabilities Act
AFD	Albeni Falls Dam
APE	Area of Potential Effect
BiOp	Biological Opinion
BLM	U.S. Department of Interior, Bureau of Land Management
BPA	Bonneville Power Administration
cfs	cubic feet per second
°F	Degrees Fahrenheit
EM	Engineer Manual
EP	Engineer Pamphlet
ER	Engineer Regulation
ERDC	Engineering Research Development Center
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCRPS	Federal Columbia River Power System
FGDC	Federal Geographic Data Committee
FPF	Fish Passage Facility
HPMP	Historic Property Management Plan
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDPR	Idaho Department of Parks and Recreation
ISDA	Idaho State Department of Agriculture
kW	kilowatt
MCE	minimum control elevation
MCL	Maximum contaminant level
MRM	Multiple Resource Management
MSL	Mean Sea Level
NAVD 88	North American Vertical Datum 1988
NGVD 29	National Geodetic Vertical Datum 1929
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NRCS	Natural Resource Conservation Service
OHW	Ordinary High Water
O&M	Operation and Maintenance
PA	Programmatic Agreement
PL	Public Law
PLO	Public Land Order
SHPO	State Historic Preservation Office/Officer
SWPA	FCRPS Systemwide Programmatic Agreement
THPO	Tribal Historic Preservation Office/Officer
USACE	United States Army Corps of Engineers
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WMA	Wildlife Management Area

1 INTRODUCTION

This Master Plan guides the strategic management of lands and associated recreational and natural resources of the federally authorized Albeni Falls Dam (AFD) on the Pend Oreille River. The Historic Properties Management Plan guides the strategic management of historic properties and archaeological resources and is not a public facing document. The U.S. Army Corps of Engineers (USACE) requires Master Plans for civil works projects and other fee-owned lands under its administrative responsibility. This updated document replaces the 2018 Master Plan for the Albeni Falls Dam Project.

1.1 PROJECT AUTHORIZATION

AFD is named after Albeni Poirer, an early French-Canadian pioneer who homesteaded and developed the area around the falls. Congress authorized AFD's construction under the Flood Control Act of 1950 (Public Law [P.L.] 81-516) in response to a great flood that swept over the river valleys of the Columbia River Basin in 1948. Construction began in January 1951 and finished in December 1955, with regulation of water levels on Lake Pend Oreille starting in 1952. AFD serves five authorized project purposes: hydropower, flood risk management, navigation, recreation, and fish and wildlife conservation.

1.2 PROJECT PURPOSE AND LOCATION

AFD and its reservoir, operated by USACE, Seattle District, function as a federal storage facility with over 1.1 million acre-feet of useable storage (Figure 1). As part of the Federal Columbia River Power System (FCRPS), AFD provides storage for 15 downstream Federal and non-federal hydroelectric projects on the Columbia and Pend Oreille Rivers. The Bonneville Power Administration (BPA) directs the dam's specific power operations to help meet the power needs of the Federal system.



Figure 1. Location of AFD and the Pend Oreille Basin.

The AFD is located on the Pend Oreille River in Bonner County, Idaho, just east of the Washington-Idaho border in Oldtown, ID. It lies approximately 50 miles northeast of Spokane, Washington and 25 miles west of Sandpoint, Idaho. The three small towns of Oldtown, ID, Priest River, ID, and Newport, WA are all located within a 5-mile radius from the dam.

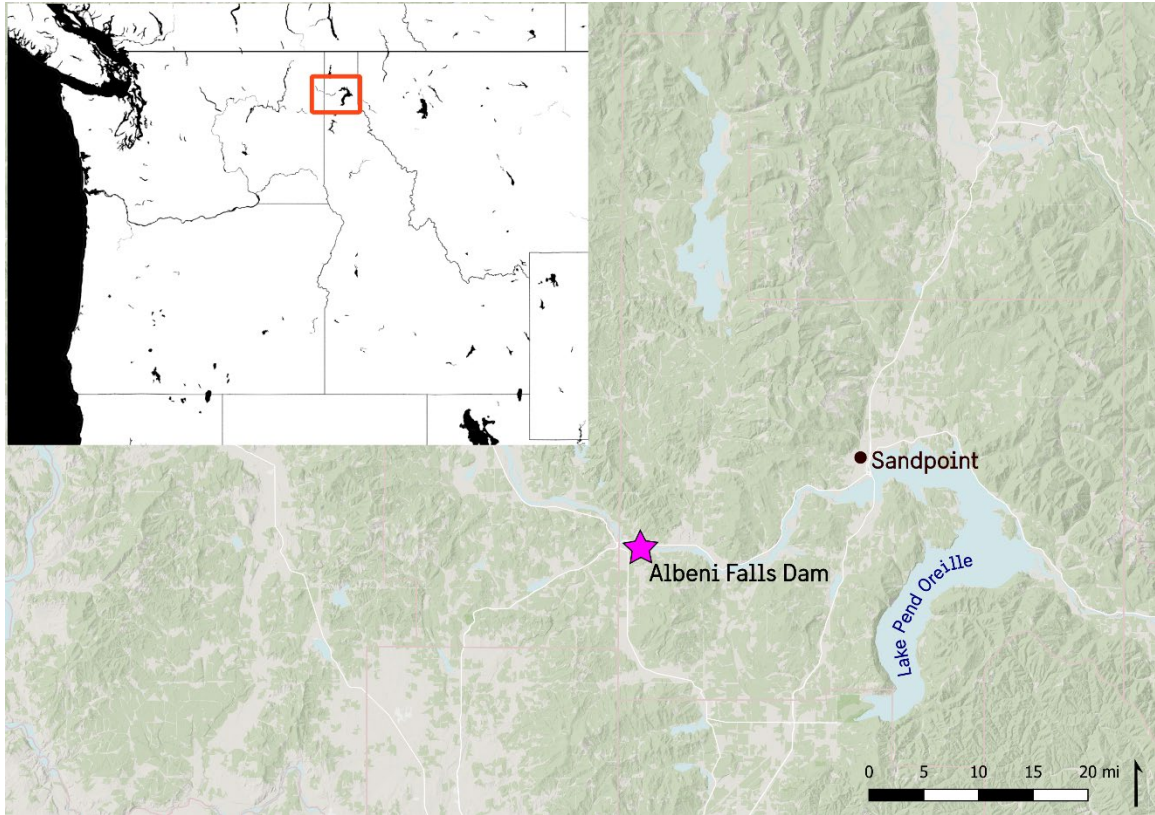


Figure 2. AFD location in Idaho

The AFD Project covers a total of 18,708 acres. Of those, 4,241 acres are land and water fee title acres, while 4,046 acres are outgranted to the Idaho Department of Fish and Game (IDFG). The fee lands consist of numerous non-adjacent parcels situated along both banks of the Pend Oreille River and the northern shore of Lake Pend Oreille (Figure 3 & 4).

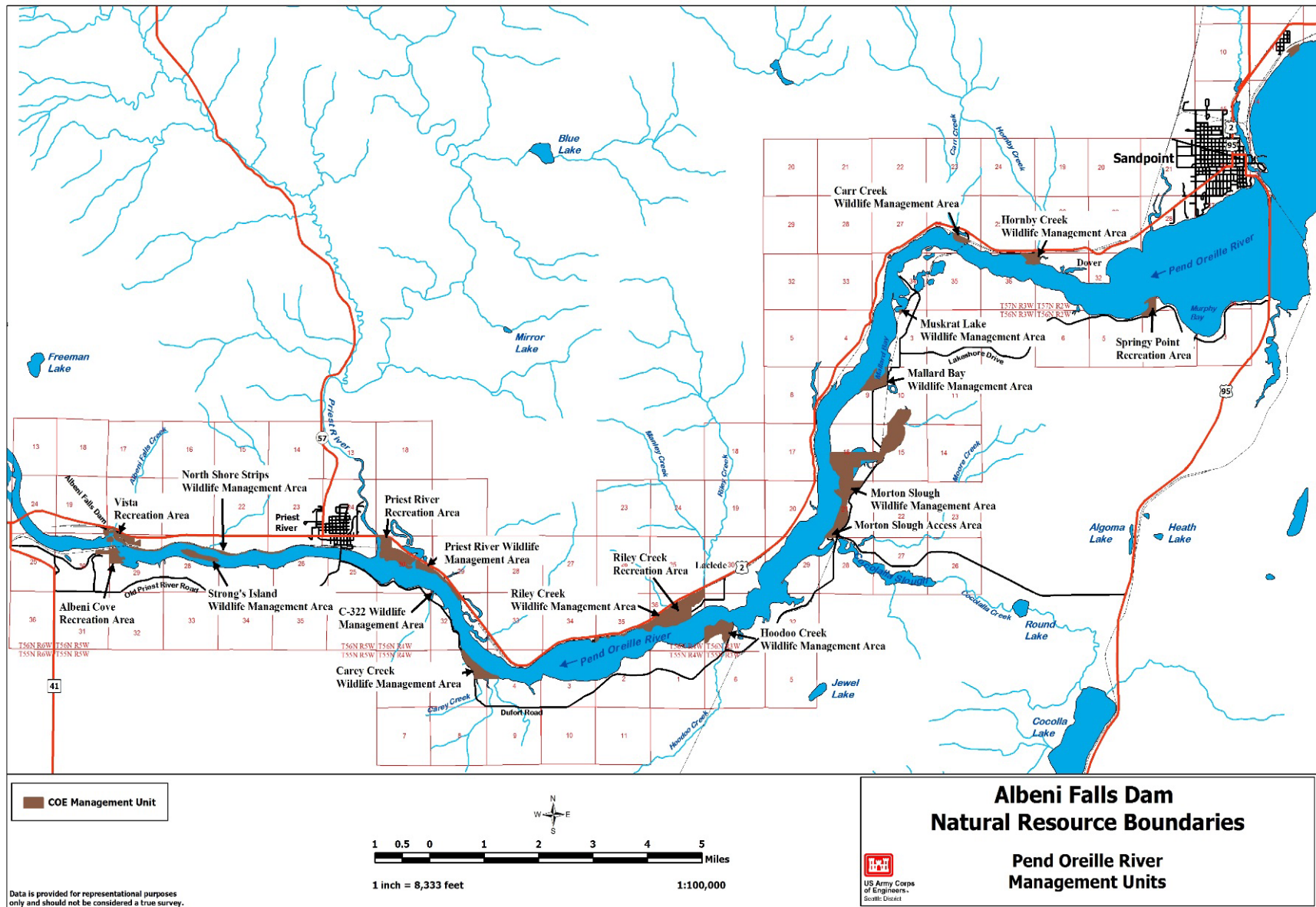


Figure 3. AFD Pend Oreille River Management Units.

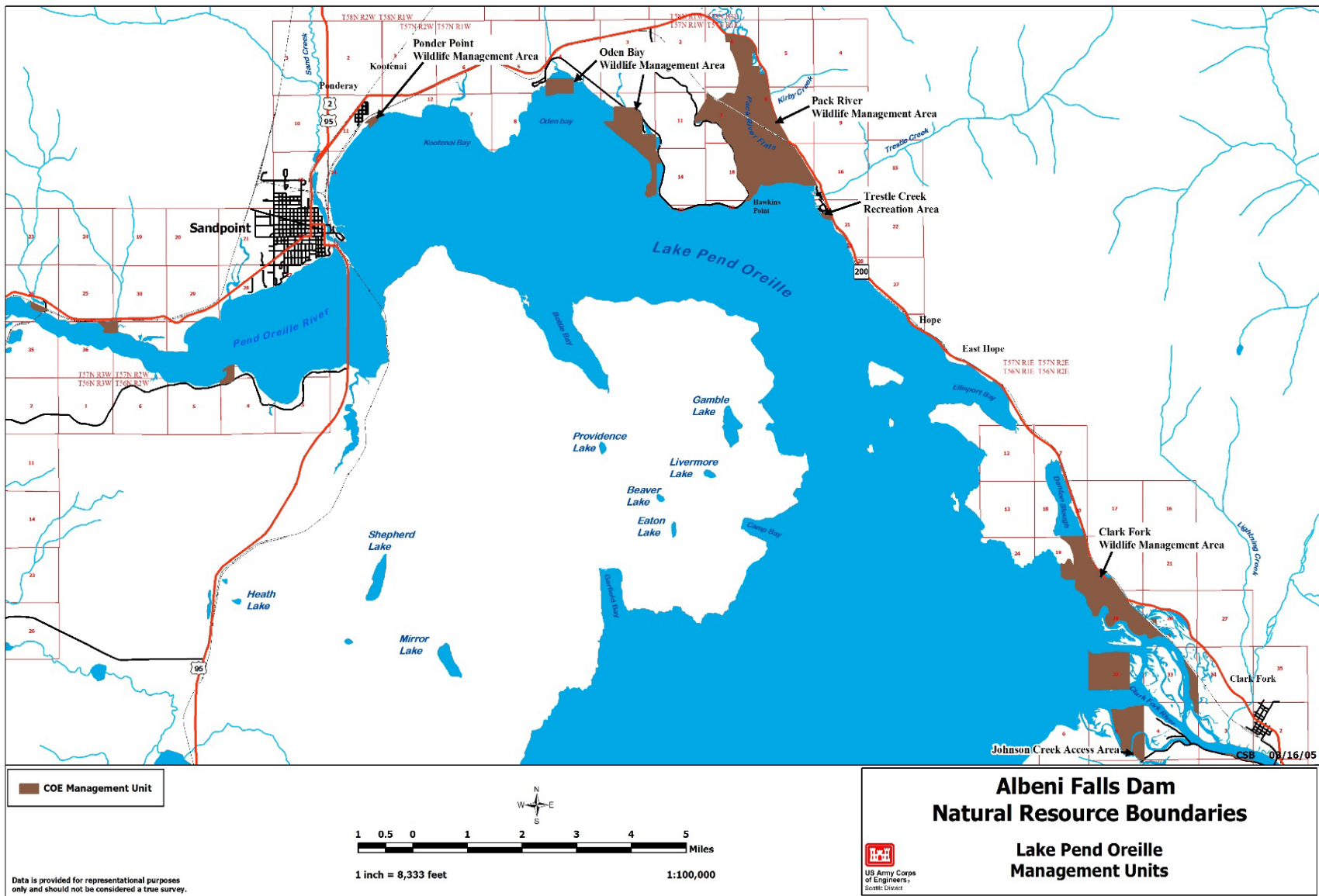


Figure 4. AFD Lake Pend Oreille Management Units.

1.2.1 Albeni Falls Dam

AFD is a 90-foot-high concrete gravity dam equipped with adjustable gates to control water levels in the reservoir. It measures a total length of 755 feet, which includes a 472-foot-long spillway and two abutment sections. The powerhouse spans 206 feet in width and 301 feet in length, housing three Kaplan turbines and generators. These generators have a combined electrical output capacity of 42,600 kilowatts (kW). The dam generates an average of 200,000 megawatt-hours of electricity annually, enough to power 15,000 households. Additional pertinent data about AFD are provided in Table 1 below.

Table 1. Pertinent Data about the Albeni Falls Dam Project.

ALBENI FALLS DAM PERTINENT DATA	
GENERAL	
Drainage Basin	Clark Fork River Basin, Pend Oreille River Basin, tributary to Columbia River
Drainage area above dam	24,200 square miles
Major Tributaries	Clark Fork, Priest, and Pack Rivers
Location of Dam	River mile 90 (above confluence of Pend Oreille River at Columbia River)
Operating and Managing Agency	USACE
Purposes	Hydropower, flood risk management, navigation, recreation, conservation of fish and wildlife
Authorization	Section 204 of the Flood Control Act of 1950 (PL 81-516)
Year Construction Started	1951
Year Dam Placed into Operation	1955
Construction Cost	\$34 million (about \$398,446,000 million in 2024 value)
DAM	
Type	Concrete gravity, submerged spillway
Crest Elevation	2,033 feet MSL (NGVD 29) ¹
Crest Length	755 feet (dam, spillway, and powerhouse)
Structural Height	90 feet
Concrete Volume	136,000 cubic yards

¹ The jurisdictional line for both the Clean Water Act and the Rivers and Harbors Act is the Ordinary High-Water Line (OHW) located at 2,062.5 feet mean sea level (MSL) National Geodetic Vertical Datum 1929 (NGVD 29). All elevations in the body of this document are in NGVD 29.

ALBENI FALLS DAM PERTINENT DATA	
Outflow	Critical head and full gate 11,550 cubic feet per second (cfs) per unit thru the powerhouse = 34,650 cfs total. Design flow for the project is 350,000 cfs.
POWER FACILITIES	
Number of Units	3 generators
Nameplate Rating, Kilowatts	42,600 kW
Powerhouse Length, Width	301 feet x 206 feet
Turbine Type	Kaplan turbines, movable 4-blade, propeller type
Turbine Ratings, Horsepower	19,600 horsepower
Head	22-foot
Average Energy Output	200,000 megawatt-hours
SPILLWAY	
Type	Caterpillar, 2-leaf vertical lift
Total Number of gates	10
Dimensions	40 x 32 feet, each
Crest Elevation	2,033 feet
Length, gated section gross	472 feet
Net opening	400 feet
Crane Capacity	100 ton
RESERVOIR	
Total Drainage Area	24,200 square miles
Length at Elevation 2,062.5 feet	68 miles
Shoreline Length	226 miles
Reservoir depth	1,237 feet
Surface Area	94,600 acres
Flood stage	2,063.5 feet, measured at Hope gage
Maximum Operating Pool	2,062.5 feet MSL
Minimum Operating Pool	2,049.7 feet MSL
Normal Operating Range	2,062.5 to 2,051 feet MSL
Storage Capacity	1,155,000-acre feet
LANDS	
USACE-administered	4,241 acres
Easement	9,426 acres, where 14 acres are easements for operations, 113 acres are easements for other purposes, and 9,299 acres are for flowage easements that allows for perpetual inundation of lands below elevation 2,062.5 feet MSL, and intermittent inundation of lands between 2,062.5 and the approximate 2,067.5-foot contour.
Outgrant to IDFG	Approximately 4,046 acres of land

ALBENI FALLS DAM PERTINENT DATA	
Transfer of public lands	5,041 acres (Lands withdrawn from appropriation under public land laws for use by USACE for flowage purposes. These lands are managed by the U.S. Department of Agriculture, U.S. Forest Service, Panhandle National Forest, or the U.S Department of Interior, Bureau of Land Management.)

1.2.2 Lake Pend Oreille

Lake Pend Oreille is one of the largest (94,600 acres) and deepest (1,237 feet) lakes in the western United States. The top 11 feet of the lake serve as the reservoir for AFD. Nestled in a deep glacially carved, U-shaped valley, the lake separates three lofty mountain ranges: Cabinet, Selkirk, and the Coeur d’Alene mountains. Along approximately 65 miles of the lake’s shoreline, these mountains rise precipitously and rocky from the water’s edge to elevations of 5,000 to 6,000 feet above MSL. The combined shoreline of Lake Pend Oreille and the Pend Oreille River stretches 226 miles. The reservoir itself is 68 miles long, with a maximum width of 6.5 miles and an average depth of 545 feet. Major tributaries feeding the reservoir include the Clark Fork, Pack, and Priest Rivers. The Clark Fork River, which empties into the northeast corner of the lake, is the largest tributary, contributing about 85 percent of the inflow. Both the Pack River and Priest River enter the reservoir from the north, with the Pack River flowing into Lake Pend Oreille and the Priest River flowing into the Pend Oreille River.

1.2.3 Clark Fork Drift Facility

As part of its regular operations, AFD maintains a woody material collection facility on Lake Pend Oreille at the mouth of the Clark Fork River Delta (Figure 6), which is the main tributary into the lake. Located approximately 45 river miles upstream from AFD, near the town of Clark Fork, Idaho, the drift yard sits on the right bank of the delta where the Clark Fork River meets Lake Pend Oreille. The drift yard facility and the boom system that directs the driftwood span three river miles just downstream of Clark Fork.

Before the dam was built, high water would carry woody material through the system, and any debris would accumulate on the lakeshore when waters receded, keeping the navigational season free of floating debris. However, dam operations have extended the high-pool period during the summer months following spring snowmelt, increasing the impact of driftwood on navigation. Each year, less woody material became beached, leading to more debris remaining afloat during the boating season. This resulted in accumulation of floating woody material, as annual floodwaters added to debris from previous years (USACE 1954).

To address the challenge of debris interfering with safe navigation, USACE determined that managing the woody material drift caused by dam operations was in the public’s

best interest. Consequently, the government constructed the drift yard facility to manage worsening woody material drift conditions beyond what existed prior to the dam's construction.

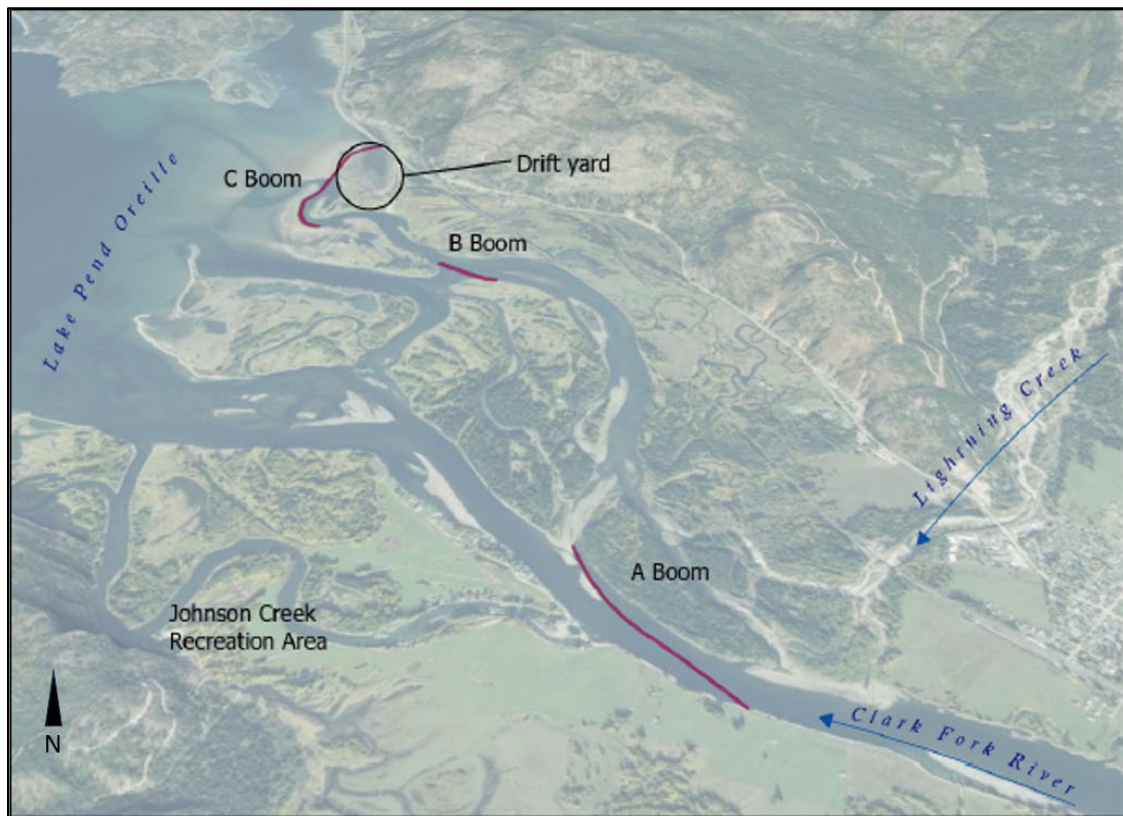


Figure 5. AFD Clark Fork Drift Yard Facility. The red colored lines represent separate sections of the boom system that directs floating woody material to the drift yard.

The drift yard facility functions passively as water currents direct floating woody material into the mainstem of the Clark Fork River using a series of boom systems (A, B, and C booms; Figure 5). This material eventually flows into a drift holding facility where it is contained indefinitely. Driftwood typically originates from high-water events in nearby Lightning Creek during flood season, but it can appear in the river and delta area year-round due to local activities. The drift typically includes various sizes of woody material, ranging from small sticks to entire trees with their roots intact. Occasionally, dock structures that have broken loose from their moorings end up in the facility or get stranded along the riverbanks as water levels fall and structures are beached on the lakebed.

Disposal options have consisted of piling the driftwood mechanically on the lakebed during low water periods, removing it for conservation projects, and, in the past, burning it. At present, the public is allowed to harvest wood from the drift yard for personal use.

1.3 PURPOSE AND SCOPE OF MASTER PLAN

Master Plans provide guidance for future development and maintenance of recreation and wildlife management areas on USACE lands (Figure 6). These plans are required for civil works projects and other fee-owned lands that USACE manages, as outlined in ER/EP 1130-2-550. A Master Plan serves as a conceptual framework rather than a detailed design or administrative document, providing essential guidance for future recreational opportunities.

This plan is a vital tool for responsible stewardship and sustainability, ensuring that the facility's resources benefit both present and future generations. It articulates USACE's responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop land, water, and associated resources. However, the Master Plan does not address regional water quality, water level management, shoreline management, or the operation and maintenance (O&M) of project operations facilities, such as the dam, powerhouse, or spillway operations, or the future fish passage facility. The plan remains flexible and can be revised as needs and conditions change.



Figure 6. Riley Creek Recreation Area on the Pend Oreille River.

1.4 PRIOR MASTER PLANS / DESIGN MEMORANDUM

Prior to 1999, *Design Memorandums* served as the formal documents that defined engineering responsibilities, requirements, and procedures for the planning, design, construction, and operations phases of civil works projects. However, this system of indexing documents is no longer in use per Engineer Regulation (ER) 1110-2-1150. Below is the list of the previous Master Plans for AFD Project. Appendix A contains the complete list of Design Memorandums, National Environmental Policy Act (NEPA) documents, and other studies.

- The Master Plan, Development, Development and Management of Albeni Falls Reservoir (1955)

- Albeni Falls Project, The Master Plan for Development and Management of Reservoir Lands, Design Memorandum 23B (1964)
- Albeni Falls Project Master Plan, Design Memorandum 25 (1981)
- Albeni Falls Project Master Plan (2018)

2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1 DESCRIPTION OF RESERVOIR AND NAVIGATION POOLS

Reservoir operations, including water surface level management, are inextricably linked to power generators, flood control, fisheries, recreational, and the management of natural resources and historic properties on Project lands. Since the original authorization of the Project, priorities in the watershed have shifted, particularly regarding the social and economic importance of recreational uses. Additionally, new information about the life cycles and habitat needs of many fish species has emerged. In addition, the competing demands for water among various agencies, resources, and water users can complicate management efforts. Although these water uses and demands are not necessarily mutually exclusive, they add complexity to the management of lake levels.

2.2 HYDROLOGY

AFD is within the Clark Fork/Pend Oreille River Basins. The Pend Oreille River at Albeni Falls Dam has a watershed of about 24,200 square miles, which produces an average streamflow of about 25,930 cfs in a low-gradient stream (0.1 percent). The Clark Fork River is the lake's largest tributary, contributing about 86 percent of the total inflow, while the Priest River supplies around seven percent of the inflow to the Pend Oreille River upstream of AFD.

Historically, the unregulated water surface elevation (level) of the lake fluctuated between a mean low of 2,048 feet MSL and a mean high of 2,061 feet MSL. This unregulated cycle featured a rapid rise in water levels during spring and early summer due to snowmelt runoff, a quick drop in midsummer, and stable levels during fall and winter. The largest recorded floods occurred in 1894 and 1948, with water surface elevations reaching 2,075.9 and 2,071.6 feet MSL, respectively.

2.3 SEDIMENTATION AND SHORELINE EROSION

Localized bank erosion is common to the Albeni Falls Reservoir. The predominantly silt and clay banks are particularly subject to erosion and sloughing. Additionally, fluctuating winter and summer reservoir pool levels often leave the banks unvegetated. Wave action during low pool levels erodes material from the toe or slopes of these banks, further destabilizing them. Due to low organic content and the sandy composition of the surface soils, exposed surface soils erode easily from wind, heavy rainfall, and

snowmelt. These erosion issues are common in heavily used overnight and day-use recreation areas.

To control erosion, authorities determine the extent of the problem and associated costs. Generally, the government does not conduct activities along the shoreline within flowage easements (between elevation 2,062.5 and 2,067.5 feet MSL) until encroachment or trespass occurs beyond these boundaries. When trespass occurs or structures are threatened by continual erosion, officials perform preliminary investigations and evaluations, then submit the results to the Seattle District for further evaluation. If corrective action is required, options include the procurement of a larger area of flowage easement or the construction of protective structures. The selected corrective method primarily depends on comparative cost estimates for each procedure. Once approved, authorities will acquire additional easements or prepare plans and specifications for construction.

2.4 WATER QUALITY

Water quality and wastewater treatment activities occur in USACE-managed recreation areas open to the public and the powerhouse. The State of Idaho Department of Environmental Quality (IDEQ) and the Environmental Protection Agency (EPA) oversee lake and river water quality and wastewater treatment at other facilities in the project area. AFD personnel coordinate with these agencies to ensure compliance with regulations pertaining to potable water systems and waste removal systems in the recreation areas.

2.4.1 Potable/Domestic Water Quality

The Riley Creek Recreation Area receives potable water through Utility Agreement No. 85-6 with the Laclede Water District. In 2008, the Priest River Recreation Area was connected to the Priest River City Municipal Water System. The Albeni Cove and Springy Point Recreation Areas provide potable water through chlorinated ground water well systems, which pump directly to all points within the recreation areas. The Vista Area, Visitor Center, and Natural Resource Maintenance Shop share a groundwater well that also serves the powerhouse. The Trestle Creek Recreation Area does not have a potable water system.

IDEQ regulates water quality in the state and establishes guidelines based on minimum water quality standards determined by the EPA. These standards include testing procedures, maximum contaminant levels, and standards for drinking water systems. Water samples from potable water and swim areas are collected according to State regulations and tested by various approved laboratories under contract. State and US standards guide the development of sampling frequencies, procedures, and monitoring requirements for the recreation areas. Current testing frequencies for potable water and swim areas are listed in Table 2 below. The listed frequencies meet or exceed State requirements, and additional tests are taken as needed. Such conditions may arise from weather conditions, activities affecting water quality (like broken water lines), or public

complaints (such as “swimmer’s itch”). These conditions are rare and do not dictate regular additional testing. The project maintains records of all water testing results.

Table 2. Current testing frequencies for potable water/swim areas.

TEST	FREQUENCY
Residual Chlorine	Daily ²
Bacterial (Coliform)	Once per quarter
Nitrate	Once per year ³
Nitrite	Once every 9 years ⁴
Radiological	None

2.4.2 Groundwater under Direct Influence of Surface Water

Surveys by IDEQ determined that all USACE wells associated with the Project have the potential to be influenced by groundwater, leading to a requirement for USACE to test these wells for groundwater influenced by surface water over time. Testing parameters included daily temperature and pH measurements of both well water and surface water for a minimum of four months between April 1995 and June 1999. Tests were conducted in 1995 for the powerhouse and Albeni Cove, in 1996 at Priest River, and in 1997 at Springy Point. Results were submitted to IDEQ following the testing period.

In 1995, IDEQ found that the powerhouse showed no influence from surface water. However, in winter 2000, IDEQ reported results for the recreation areas: Albeni Cove and Priest River were found to have possible surface water influence, while Springy Point exhibited none. Based on these findings, IDEQ required additional testing for Albeni Cove and Priest River to confirm presence or absence of a surface water connection. This test (Microscopic Particulate Analysis) was performed in the spring and summer of 2001 at Albeni Cove, and the fall of 2002 at Priest River. All tests returned with a score of zero, indicating low risk.

In 2008, the Priest River Recreation Area transitioned to the Priest River Municipal Water System, and the well was capped and covered. The Riley Creek Recreation Area is now served by the city of Laclede’s water system.

² Chlorine readings must register 0.4 - 0.5 mg/l at the pumphouse or 0.2 mg/L at the furthest distribution point. This is a requirement of USACE, the State does not require these potable water systems to chlorinate or maintain a residual.

³ Nitrates readings must register between non-detectable to 1.63 mg/L for all regulated systems.

⁴ IDEQ and EPA consider nitrate above the maximum contaminant level (MCL) of 10.0 mg/L in drinking water as an acute contaminant. That means it may have immediate impacts on humans, and specifically young children. *Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome* (EPA 2009). However, health specialists, toxicologists, and other professionals, generally agree that nitrate ingested through drinking water above 5.0 mg/L and below the MCL “are of concern” if ingested on a regular, long-term basis

2.4.3 Wastewater Treatment

The only wastewater treatment facility originally on USACE-operation areas was located at the powerhouse for the treatment of powerhouse effluents. Before being released into the trail race, all wastewater was treated with chlorine. In 2011, this system was deactivated and converted to a septic field/lateral system.

2.4.3.1 Trailer Dump Stations

Trailer dump stations are provided at Priest River, Riley Creek, and Springy Point Recreation Areas. Staff clean and sanitize these stations daily throughout the recreation season. To prevent cross-contamination, potable and non-potable water sources are separated and marked.

2.4.3.2 Septic Tank Systems

Septic systems within Albeni Cove, Riley Creek, the Vista Area, and Trestle Creek consist of tanks, lateral lines, and drain fields (the septic system at Trestle Creek consists of a tank only). Typically, staff pump the tanks every 1-2 years, or as needed. Additives are incorporated once a year to assist in the microbial breakdown of materials. Sewage lift stations operate at Albeni Cove, Priest River, and Springy Point. At Albeni Cove, pumps activate through a series of high and low water floats. Effluents are pumped to a drain field near the park entrance gate. This lift station has a sound alarm and red light to indicate pump failure and alert maintenance personnel. In 2021, an additional drain field was installed at Albeni Cove to facilitate construction of volunteer park host campsites. To save costs, staff closed the vault restroom at Trestle Creek in 2023 and opted for portable toilets for future recreation seasons.

2.4.3.3 Sewer Systems

In 1990, the sewer system at Priest River underwent rehabilitation and connected to the city of Priest River under contract. The system includes two grinder pumps with high and low water lights and alarms. If a pump fails, users can manually reset and activate the pumps. Springy Point's system is serviced under contract with the Southside Water and Sewer District and features grinder pumps near each restroom to pump the effluent to the main line. These pumps activate similarly to those at Albeni Cove, using high and low water floats. The small loop system has an alarm light that indicates when the system has shut down, while the large loop restroom has both light and a sound alarm. Maintenance personnel are notified of all pump failures.

2.4.3.4 Greywater Control

Campgrounds are equipped with drains for greywater disposal (wastewater typically associated with sinks and other non-septic utilities). In addition, park users may flush greywater directly into the sewer and septic system facilities.

2.5 PROJECT ACCESS

The geographic distribution of USACE lands influence management strategies. Project Operations is headquartered at AFD (Figure 3), located 55 miles from the Johnson Creek

Recreation Area, the most remote USACE site within the Clark Fork Wildlife Management Area (Figure 4).

2.5.1 Land Access

All USACE lands, except lands in the Clark Fork River Delta, Pack River Delta, Trestle Creek, Ponder Point, and Oden Bay, are located on the north or south side of the Pend Oreille River arm of Albeni Falls Reservoir. These areas are easily accessible from Federal, state, and county roads. The proximity of existing recreation areas to population centers significantly influences their popularity and usage. Potential development sites are more remote from local population centers and heavily traveled highways.

2.5.2 Water Access

There are over 35 vehicle access points for boat launching along the Pend Oreille Lake and River, managed by several entities (Table 3). These facilities include both public and privately owned access points. Publicly owned facilities are managed by USACE, U.S. Forest Service (USFS), Idaho Department of Fish and Game (IDFG), Idaho Department of Parks and Recreation (IDPR), and Bonner and Kootenai Counties or municipalities. Privately owned facilities allow public access, but launching fees may apply.

Pend Oreille Lake and River are readily accessible for boating, canoeing, and other watercraft when at full pool. However, annual drawdowns can limit opportunities to launch because the length of the boat ramps do not reach to the lower lake elevations. Efforts have been made to extend public owned launch ramps for greater accessibility.

Table 3. Publicly accessible boat access points.

NAME	LAUNCH	DOCK	LOCATION	LANDOWNER / MANAGER
Albeni Cove	●	●	Albeni Cove Road	USACE
Bayview Public Boat Launch	●		Bayview	County
MacDonald Hudson Bay Resort and Marina	●	●	Bayview	Private
Bottle Bay Marina	●	●	Bottle Bay	Private
Denton Slough	●		Denton Slough	USACE/IDFG
Clark Fork Drift Yard	●	●	Clark Fork	USACE/IDFG
Clark Fork River	●		Clark Fork	IDFG/County
Johnson Creek Recreation Area	●	●	Clark Fork	USACE/IDFG
Dover Marina	●	●	Dover	Private
Morton Slough	●	●	Dufort Road	USACE/IDFG
Farragut State Park, Button Hook Bay		●	Farragut State Park	IDPR

NAME	LAUNCH	DOCK	LOCATION	LANDOWNER / MANAGER
Farragut State Park, Eagle Launch	●		Farragut State Park	IDPR
Pend Oreille River (Ferry Lane Access)	Primitive		Ferry Road	IDFG
Garfield Bay (State owned property)	●	●	Garfield Bay	County
Granite Point		●	Granite	IDFG
Hawkin's Point	●		Hawkins Point	USACE/IDFG
Holiday Shores Resort Marina	●	●	Hope	Private
Hope Basin	●		Hope	County
Hope Marina	●	●	Hope	Private
Island View Trailer Resort	●	●	Hope	Private
Kramer Marina	●	●	Hope	Private
Pringle Park	●		Hope	IDFG
Sam Owen Recreation Area	●		Hope	USFS
Cedar Creek		●	Johnson Creek Road/FR278	Private
Laclede Ferry	●		Laclede	County
Riley Creek Recreation Area	●	●	Laclede	USACE
Lakeview Boat Launch and Dock	●	●	Lakeview	County
Pack River Access	●		Pack River	USACE/IDFG
Bonner Park West	●	●	Priest River	County
Priest River Recreation Area	●	●	Priest River	USACE
Lakeview Park & War Memorial Field	●		Sandpoint	Municipal
Sandpoint City Beach	●	●	Sandpoint	Municipal
Springy Point Recreation Area	●	●	Springy Point	USACE
Sunnyside Access	●		Sunnyside	IDFG
Trestle Creek Recreation Area	●		Trestle Creek	USACE
Whiskey Rock Bay Campground	●		Whiskey Rock	USFS
Willow Bay Marina	●	●	Willow Bay Road	Private

2.5.3 American with Disabilities Act Access

With the passage of the Americans with Disabilities Act (ADA) in 1990 (P.L. 101-336), USACE, as well as IDFG and other local governments, have made improvements to recreation areas to facilitate greater access for disabled visitors. Wheelchair accessible boat boarding docks, fishing docks, restrooms, picnic tables, camp sites, and trails can be found throughout the area (

Table 4).

Multiple use trails, such as those converted from former railroad right-of-way allow longer viewing access. In the Sandpoint area, the following are three asphalt-paved trails that the public can access:

- Sandpoint Byway Trail (2.5 miles)
- Long Bridge Trail (5.3 miles) – Sagle to Sandpoint
- Little Fox/Milltown Trail (Hwy 2) – Dover through Sandpoint

Table 4. ADA Accessible Recreation Facilities.

SITE	CAMP SITES	TRAILS	PICNIC TABLE	REST-ROOMS	BOARDING DOCK	FISHING DOCK
Albeni Cove Recreation Area		•	•	•	•	
Albeni Vista and Visitor's Center		•	•	•		
Hawkins Point				•	•	
Johnson Creek/Clark Fork Drift Yard				•	•	
Morton Slough				•	•	
Priest River Recreation Area	•		•	•	•	
Riley Creek Recreation Area	•	•	•	•	•	•
Springy Point Recreation Area			•	•	•	
Trestle Creek			•	•	•	

2.6 CLIMATE

AFD and the Panhandle Region⁵ of Idaho are in the Taiga Biome, which is a climate composed of a combination of west coast marine and continental climate. Maritime influences are strongest during winter, and snowfall (frequently heavy) results when relatively warm, moist air from the Pacific Ocean is cooled as it is lifted over mountains in the Columbia Basin and mixes with colder air moving south from the Arctic.

Continental influences are strongest in summer with thunderstorm showers during May and June followed by hot, dry weather until mid-September.

⁵ The Panhandle Region of Idaho (term as used by Idaho State Agencies) comprises Boundary, Bonner, Benewah, Kootenai, and Shoshone Counties.

July is the warmest month with an average daily high temperature of 82 degrees Fahrenheit (°F) and average daily low temperature of 50°F at Sandpoint, Idaho. January is the coldest month at Sandpoint, with an average daily high temperature of 34°F and average daily low temperature of 25°F. Temperature extremes range from a low of –29°F during winter to a high of 105°F during summer. Mean annual precipitation averages approximately 24 inches, including an average annual rainfall of 18 inches. The wettest months are November (2.4 inches average) and May (1.9 inches average). Snowfall can occur from October thru May, averaging 49 inches of snow per year. December and January are the heaviest snowfall months with an average of 15.8 inches and 16.9 inches, respectively.

2.7 TOPOGRAPHY, GEOLOGY, AND SOILS

USACE-owned project lands are primarily flat floodplains relieved with low slopes or lacustrine terraces. Slope on project lands can be grouped into categories of 0-10 percent, 10-20 percent, and 20+ percent. Slopes of 0-10 percent are essentially flat and are usually the most suitable sites for development. Slopes of 10-20 percent are sufficiently steep to restrict conventional construction. To develop these slopes, modified construction methods or significant topographic alternation is required. Development on slopes over 20 percent is very constrained.

There is a great diversity of soils in the area owing mainly to the diverse parent material and geomorphic processes. This material varies from glacially scoured bedrock to deep deposits of unconsolidated and sorted glacial and alluvial material. Throughout the area, varying thicknesses of silty wind-deposited loess are the predominant soils. In general, the upland soils of the area, which have developed over bedrock, are shallow, less fertile, and drier than the lowland soils, which have formed from thick accumulations of sediment, vegetation, and glacial drift. The low-lying project lands typically have poorly drained soils, such as silty clay, silty loam, and hardpan soils. The upland project lands have varying soils from rock outcrops with minimal soil to silty loams and fine sandy loams.

2.8 RESOURCE ANALYSIS

2.8.1 Ecological Setting

The waters of Lake Pend Oreille, the varied topography of the adjacent uplands, and the environment of forest and mountains combine to create many scenic views throughout the watershed. The reservoir and its surrounding territory offer a wide variety of recreational opportunities. Fishing is a year-round activity that attracts many visitors to Lake Pend Oreille. The summer season offers swimming, boating, camping, picnicking, hiking, riding, and mountain climbing. Deer, elk, bear, and migratory game birds are plentiful, and hunting is popular in autumn. Skiing and snowmobiling are principal winter activities in the region, with ice fishing active in some areas.

USACE lands allow ready access to Pend Oreille Lake and River. Project facilities provide opportunities for many types and intensities of outdoor recreation experiences, which vary from primitive boat access camping to high-density day use activities. Recreation facilities are heavily used during the summer. In addition to their value for human use, project lands provide thousands of acres of wildlife habitat that supports significant variety of wildlife populations, including many various species of resident and migratory waterfowl.

Scenic driving/sightseeing is a major recreation activity in the state of Idaho during the summer months, and the scenic and recreational amenities of the Lake Pend Oreille area and International Selkirk Loop are often featured in national tourist travel magazines. Viewpoints around the lake allow visitors to stop and picnic, while the varied sites present opportunities to study nature, birds and wildlife, hike, walk, and enjoy views of the lake and dam.

2.8.2 Vegetative Resources

2.8.2.1 Coniferous Forests

Coniferous forests dominate the Lake Pend Oreille landscape. At higher elevations (above 3,500 feet), mature forests are dominated by Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*). At lower elevations near the water's edge, ponderosa pine (*Pinus ponderosa*), and western larch (*Larix occidentalis*) dominate, with western red cedar, Douglas-fir, and grand fir (*Abies grandis*) also prevalent. North Idaho coniferous forests are highly diverse and typically include multiple coniferous species, along with deciduous species in many areas.

Common deciduous trees in the area include paper birch (*Betula papyrifera*), aspen (*Populus tremuloides*), willows (*Salix spp.*), black cottonwood (*Populus balsamifera ssp. Trichocarpa*), and red alder (*Alnus rubra*). Most of the forests on USACE lands are second-growth, ranging from 15 to over 100 years old. Forest understory is well established in open canopy forests. Alder, hawthorn (*Crataegus spp.*), ocean spray (*Holodiscus discolor*), snowberry (*Symphoricarpos albus*), dogwood (*Cornus sericea L.*), and serviceberry (*Amelanchier alnifolia*) predominate. These areas are important nesting and feeding habitats for numerous large and small birds and mammals.

The following forested habitat types are found on USACE lands using the National Vegetation Information System classification (FGDC 1997):

- Open Canopy Temperate or Subpolar Needle leaved Evergreen Forests
- Closed Canopy Temperate or Subpolar Needle leaved Evergreen Forests
- Open Canopy Cold-Deciduous Forests
- Closed Canopy Cold-Deciduous Forests
- Open Canopy Mixed Needle-leaved Evergreen and Cold-Deciduous

- Closed Canopy Mixed Needle-leaved Evergreen and Cold-Deciduous

Using the USFS classification system for North Idaho Forests (Cooper et al. 1991), the following are forested habitat types found on USACE lands:

- Western Red Cedar/Lady Fern (*Thuja plicata*/*Athyrium filix-femina*)
- Western Red Cedar/Queencup Bead Lily (*Thuja plicata*/*Clintonia uniflora*)
- Western Hemlock/Queencup Bead Lily (*Tsuga heterophylla*/*Clintonia uniflora*)
- Grand Fir/Queencup Bead Lily (*Abies grandis*/*Clintonia uniflora*)
- Grand Fir/Ninebark (*Abies grandis*/*Physocarpus sp.*)
- Grand Fir/Ninebark (Goldthread phase) (*Abies grandis*/*Physocarpus sp.*)
- Douglas Fir (*Pseudotsuga menziesii*)
- Douglas Fir/Ninebark (*Pseudotsuga menziesii*/*Physocarpus sp.*)
- Douglas Fir/Common Snowberry (*Pseudotsuga menziesii*/*Symphoricarpos albus*)
- Ponderosa Pine/Common Snowberry (*Pinus ponderosa*/*Symphoricarpos albus*)

2.8.2.2 Shrub-lands

A shrub-land is dominated by the shrub layer rather than trees. A shrub-land occurs as a climax structure when conditions are not conducive to tree growth, such as excessively wet conditions or poor soils. It occurs as an early seral community that will be replaced by forest on more hospitable sites. Types of shrub-lands communities found on USACE lands include upland shrubs (hawthorn/snowberry), savannah (with ponderosa pine), meadows, and riparian (transition between cottonwood riparian vegetation and wetlands, dogwood/snowberry, alder/willow).

2.8.3 Wetlands

Wetlands are areas that are inundated or saturated by surface or ground water at a magnitude, frequency, and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetland communities are about 69 percent of the 4,241 acres of fee lands, and provide valuable fish and wildlife food, cover, and nest sites.

The 4,046 acres of project lands that are licensed for wildlife management to the IDFG are a combination of wetland and riparian communities. They consist primarily of wet meadows, shallow marsh, deep marsh and submerged aquatic beds. Wetlands found on USACE lands are classified under the Federal Geographic Data Committee (FGDC) Wetlands Classification Standard (Table 5). This system is also known as the "Cowardin System" (Cowardin et al. 1979), which became the National Standard in 1996. The FGDC Wetlands Classification Standard is intended for all Federal or federally funded wetlands

inventory mapping including those activities conducted by Federal agencies, states, and federally recognized Tribal entities, non-governmental organizations, universities, and others (FGDC 2013).

Table 5. FGDC Wetlands Classification Standard codes and definitions for Wetlands found on USACE lands.

CODE	DEFINITION
L1OWHh	Lacustrine/Limnetic/Open water-unknown bottom/Permanently flooded
L1UBH	Lacustrine/Limnetic/Unconsolidated bottom/cobble-gravel
L1UBHh	Lacustrine/Limnetic/Unconsolidated bottom/ Permanently flooded/Dike impounded
L2AB3H	Lacustrine/Littoral/Aquatic bed/Aquatic moss/Permanently flooded
L2AB4C	Lacustrine/Littoral/Aquatic bed/Aquatic moss/Seasonally flooded
L2AB4H	Lacustrine/Littoral/Aquatic bed/aquatic moss/Permanently flooded
L2UBF	Lacustrine/Littoral/Unconsolidated bottom/Sand
L2UBH	Lacustrine/Littoral/Unconsolidated bottom/Sand
L2USC	Lacustrine/Littoral/Unconsolidated shore/Sand
PEM1/SS1C	Palustrine/Emergent/Persistent/Scrub-shrub/Broad-leaved deciduous/Seasonally flooded
PEM1C	Palustrine/Emergent/Persistent/Seasonally flooded
PEM1F	Palustrine/Emergent/Persistent/Semi-permanently flooded
PFO1A	Palustrine/Forested/Broad-leaved deciduous/Temporarily flooded
PFO1C	Palustrine/Forested/Broad-leaved deciduous/Seasonally flooded
PFO4A	Palustrine/Forested/Needle-leaved Evergreen/Temporarily flooded
PFO4C	Palustrine/Forested/Needle-leaved Evergreen/Seasonally flooded
PSS1C	Palustrine/Scrub-shrub/Broad-leaved deciduous/Seasonally flooded
PUBH	Palustrine/Unconsolidated bottom/Permanently flooded
R3UBH	Riverine/Upper

2.8.3.1 Aquatic Bed and Lacustrine Littoral Vegetation

Aquatic vegetation found along shorelines of the lake and the river corresponds to water depth. Floating-leaved pondweed (*Potamogeton natans*), watermilfoil (*Myriophyllum spp.*), bladderwort (*Utricularia spp.*), and other pondweed species (*Potamogeton spp.*) occur solitary or in aggregates in shallow littoral zones (<6.5 feet). Yellow pond lily (*Nuphar polysepalum*) and water shield (*Brasenia schreberi*) are frequently present as large aggregates in deep littoral zones. Large leaved pondweed (*Potamogeton amplifolius*), white stalked pondweed (*Potamogeton praelongus*), and Richardson's pondweed (*Potamogeton richardsonii*) are common in limnetic zones (>6.5 feet) (Jankovsky-Jones 1997).

Over the last decade, the amount of invasive aquatic vegetation has become a concern for residents, visitors to the region and USACE. Excessive amounts of aquatic vegetation seasonally die, causing unpleasant odors and reduce dissolved oxygen concentrations in the water. Of particular concern is the invasive Eurasian watermilfoil (*Myriophyllum spicatum*) and flowering rush (*Butomus umbellatus*), described in more detail in section 2.8.4 and Appendix B.

2.8.3.2 Emergent (Herbaceous) Vegetation

Herbaceous wetlands on project lands usually occur as a complex of monocultures dominated by sedges (*Carex spp.*), bulrushes (*Scirpus spp.*), creeping spike rush (*Eleocharis palustris*), and common cattail (*Typha latifolia*). Water lady's thumb (*Polygomim amphibium*) may occur on lake or pond shores. Grasslands and seasonally flooded wetlands are mostly dominated by the non-native reed canary grass (*Phalaris arundinacea*) with occasional tufted hairgrass (*Deschampsia cespitosa*), bluejoint reed grass (*Calamagrostis canadensis*), or sedges (Jankovsky-Jones 1997).

2.8.4 Invasive Species

Invasive species pose a serious threat to native aquatic and terrestrial plant communities and are an important contributor to loss of biodiversity. Invasive species are often found in areas of disturbance. Invasive species of particular concern in the project area include Eurasian watermilfoil (*Myriophyllum spicatum*)⁶, reed canary grass, flowering rush, spotted knapweed (*Centaurea stoebe*), and yellow-flag iris (*Iris pseudacorus*). The list of noxious weeds and invasive fish species has grown since the publication of the 2018 Master Plan, and the frequency of detecting new infestations is increasing. In addition to plant species, aquatic clams and mussels are also a concern. These include Asian clams (*Corbicula fluminea*), zebra mussels (*Dreissena polymorpha*), and quagga mussels (*D. rostriformis bugensis*). The non-native snapping turtle (*Chelydra serpentina*) has been reported in Lake Pend Oreille since 2012, with observations in 2012, 2015, and 2021, and 2024. Effects of this population on the watershed are presently unknown. USACE works cooperatively with the Natural Resource Conservation Service (NRCS), Idaho State Department of Agriculture (ISDA), Bonner County of Idaho, IDFG and United States Fish and Wildlife Service (USFWS) in monitoring or treating for invasive species. Additional information on invasive species and USACE actions to control these species are included in Appendix B.

2.8.5 Threatened and Endangered Species

At the time of updating this Master Plan, federally listed species under the Endangered Species Act (ESA) near AFD and project lands include six species listed as Threatened, and one candidate species (Table 6). Bull trout (*Salvelinus confluentus*) is the only ESA species with critical habitat designated in the project area. Waters designated as critical habitat for bull trout include the Pend Oreille River, Priest River, Pack River, Trestle Creek, Johnson Creek, and the Clark Fork River. Monarch butterflies (*Danaus plexippus*)

⁶ Not to be confused with the native milfoil, whorl-leaf watermilfoil (*Myriophyllum verticillatum*).

are known to be present on USACE lands. Whitebark Pine (*Pinus albicaulis*) and the yellow-billed cuckoo (*Coccyzus americanus*) are unlikely to be present on USACE lands as their habitat preferences are not present. Canada lynx (*Lynx canadensis*), North American wolverine (*Gulo gulo luscus*) and the grizzly bear (*Ursus arctos horribilis*) could be present on USACE lands while dispersing to new territories, however, these species tend to avoid developed areas and roadways, so their presence would be extremely rare. USACE is required to consult with the USFWS on any management actions that might affect federally listed species or their critical habitat. Additional information on federally threatened and endangered wildlife species is provided in Appendix C.

Table 6. Federally protected species potentially occurring on USACE lands.

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	CRITICAL HABITAT
Bull trout	<i>Salvelinus confluentus</i>	Threatened	Designated
Canada Lynx	<i>Lynx canadensis</i>	Threatened	Designated – not on USACE lands
Grizzly bear	<i>Ursus arctos horribilis</i>	Threatened	Proposed
North American wolverine	<i>Gulo gulo luscus</i>	Threatened	None
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened	Designated – not on USACE lands
Whitebark Pine	<i>Pinus albicaulis</i>	Threatened	Wherever found
Monarch Butterfly	<i>Danaus plexippus</i>	Candidate	N/A

Management and Recovery Plan development for these endangered and threatened species is the responsibility of other Federal and state agencies. USACE management is expected to ensure that USACE activities do not disturb or affect habitats or the species themselves, thereby avoiding a 'take' situation in which a listed species or their habitat are disturbed. Areas where threatened or endangered species are known to occur or have the potential to occur on USACE lands are classified as Environmentally Sensitive Areas under USACE Land Use Classification system (section 4.3.3). Brief descriptions of the life history and preferred habitats for the federally listed and candidate wildlife species are provided in Appendix C.

2.8.6 Other Species of Concern

In addition to the federally listed species, several state-listed threatened, endangered, or sensitive species may occur on project lands and waters. These species were identified through the Idaho Conservation Data Center and IDFG databases and are listed in Appendix C.

Approximately 140 species of plants listed by the State occur in Bonner County. As a complete inventory has yet to be conducted on USACE lands, it is not known how many of these species are present.

Over 60 species of animals that are potentially present on USACE lands are ranked 1 or 2 by the State⁷, including 45 birds, 4 mammals, 8 arthropods, 7 mollusks, and 2 amphibians. While specific inventories have not been conducted to verify the presence of some of the listed animals, their presence has been documented through sightings, surveys, and other data (for example, the northern alligator lizard and common loon are known to use USACE lands based on sightings and surveys).

2.8.7 Fish and Wildlife Resources

2.8.7.1 Fish

The Clark Fork watershed, Lake Pend Oreille, and the Pend Oreille River provide habitat for a variety of native and nonnative fish. Prevalent native and non-native species include kokanee (*Oncorhynchus nerka*), bull trout, rainbow trout (*O. mykiss*), westslope cutthroat trout (*O. clarkii*), smallmouth bass (*Micropterus dolomieu*), mountain whitefish (*Prosopium williamsoni*), yellow perch (*Perca flavescens*), sucker fish (*Catostomus spp.*) and sunfish (*Lepomis spp.*). The significant sport fishery targets trout in the cooler months and bass in the warmer months. In the lake proper, the introduced (1930's) kokanee population has served a historic commercial fishery but was closed in the early 1970's from population declines, due primarily to a decrease in food source and predation by lake trout. However, in addition to increased regulations, hatchery stocking efforts, and lake level management, IDFG implemented an intensive lake trout suppression program in 2006, and the kokanee population recovered to a point where regulations now allow up to 15 fish per day to be harvested. A full list of fish species found in the Clark Fork Basin and lower Pend Oreille can be found in the IDFG Fisheries Management Plan (IDFG 2024b). The only native salmonids found in the basin are westslope cutthroat trout (*Oncorhynchus clarkii lewisi*), bull trout, pygmy whitefish (*Prosopium coulteri*), and mountain whitefish (*Prosopium williamsoni*) (IDFG 2019).

2.8.7.2 Wildlife

The Lake Pend Oreille area supports a rich diversity and abundance of wildlife species. Seasonal fluctuations in wildlife numbers and diversity are significant due to the presence of large numbers of migratory wildlife that frequent the area. The following sections provide brief summaries regarding important wildlife features of the project environment. Distribution by habitats, seasonal abundance, and food requirements are major elements of the discussion. Species lists with common and scientific names can be found in Appendix C.

⁷ 1 = Critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction. 2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction.

2.8.7.2.1 Birds

2.8.7.2.1.1 Waterfowl and Waterbirds

Numerous waterfowl species have been sighted in the Clark Fork watershed, Lake Pend Oreille, and the Pend Oreille River including mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa*), teal (*Anas discors* or *A. cyanoptera*), gadwall (*Anas strepera*), common merganser (*Mergus merganser*), and Canada goose (*Branta canadensis*). Recent surveys led by Boise State University in conjunction with USACE have recorded over 120 species in the area (Carlisle et al. 2015). Bird lists for the area are available on the eBird website⁸. During spring and fall migrations, the Pack River and Clark Fork River deltas support thousands of waterfowl and waterbirds like the American coot (*Fulica americana*). Waterfowl species include tundra swans (*Cygnus columbianus*), Canada geese, redhead ducks (*Aythya Americana*), lesser scaups (*Aythya affinis*), common goldeneyes (*Bucephala clangula*), common mergansers, and mallards. Other birds include the common loon (*Gavia immer*).

2.8.7.2.1.2 Raptors

Raptors using the area along the lake include numerous species of owls (*Asio spp.*, *Strix spp.* and/or *Bubo virginianus*), hawks (*Buteo spp.*), osprey (*Pandion haliaetus*), bald eagles (*Haliaeetus leucocephalus*), and golden eagles (*Aquila chrysaetos*). Birds of prey inhabiting riparian and upland areas include hawks and owls. Hawks and owls nest in riparian trees and open woodlands and hunt small birds and mammals in forested areas and open grasslands. Riparian cottonwood areas and nearby evergreen forests are important nesting habitats for the osprey, whereas shallow water habitats are of particular importance as foraging areas. The osprey is an area resident from mid-March through October. There is a population of resident bald eagles as well as a migratory population that overwinters in large numbers around the lake from October through March. They perch in tall trees and snags in riparian habitats or on surrounding hillsides. Their major food sources are fish, waterfowl, carrion, and animal carcasses.

2.8.7.2.1.3 Other Avian Species

This group includes wading birds, shore birds, gulls, upland game birds, and passerines (perching birds). Wading birds, including sora (*Porzana carolina*), Virginia rail (*Rallus limicola*), and American bittern (*Botaurus lentiginosus*), inhabit dense emergent vegetation around the lake. Great blue heron is a resident species that breeds in the summer. Significant shore bird populations occur during migration, with the highest concentrations occurring in spring. Species include killdeer (*Charadrius vociferous*), spotted sandpiper (*Actitis macularius*), and American avocet (*Recurvirostra americana*). The most common gulls seen are California and ring-billed (*Larus californicus* and *L. delawarensis*, respectively) although other species are possible as migrants or uncommon summer residents.

⁸ <http://ebird.org/ebird/explore> and in Bonner County specifically <http://ebird.org/ebird/subnational2/US-ID-017?yr=all>

Passerine species are numerous, with summer resident-only species predominating. Summer and spring/summer/fall resident-only species nest, forage, and use riparian and adjacent habitats. Species include vireos, warblers, thrushes, swallows, and numerous others (Carlisle et al. 2015). Wintering passerine species are less abundant and include wrens, magpies (*Pica hudsonia*), and dippers (*Cinclus mexicanus*). Blackbirds and wrens are the most common breeding passerine species in marsh areas. Swallows, warblers, and sparrows forage in and over marsh habitats but nest in riparian forests and other habitats.

Upland game birds prefer upland habitat for food, cover, and nesting but may be found in riparian cover as well. Lake Pend Oreille upland game birds include ruffed grouse (*Bonasa umbellus*), ring-necked pheasant (*Phasianus colchicus*), mourning dove (*Zenaida macroura*), and wild turkey (*Meleagris gallopavo*).

2.8.7.2.2 Mammals

2.8.7.2.2.1 Large Mammals

Large mammals include species such as black bear (*Ursus americanus*), elk (*Cervus elaphus*), moose (*Alces alces*), mule and whitetail deer (*Odocoileus hemionus* and *O. virginianus*, respectively), mountain goat (*Oreamnos americanus*), and bighorn sheep (*Ovis canadensis*). Small populations of grizzly bear and mountain lion (*Puma concolor*) is also present in the Lake Pend Oreille region. Other than grizzly bear, all are game animals in Idaho. The larger mammal species spend their summers in the forested mountains and come to lower elevations in the winter months, but some have been reported in areas around Lake Pend Oreille at all times of year. White-tailed deer spend both summer and winter seasons in deciduous and riparian habitats near the lake and prefer habitat in the Clark Fork and Pack River Deltas. Mountain goats spend the winter in small numbers on the hills and bluffs bordering the lake near Bayview at the extreme southern end of the lake.

2.8.7.2.2.2 Small Mammals

Small mammal species are both notable and abundant. Numerous carnivores, including coyote (*Canis latrans*), fox (*Urocyon spp.* and *Vulpes spp.*), lynx (*Lynx canadensis*), and badger (*Taxidea taxus*), have been identified in the forested habitats around the lake. Other small mammals, including beaver (*Castor canadensis*), river otter (*Lontra canadensis*), muskrat (*Ondatra zibethicus*), marmot (*Marmota spp.*), and mink (*Mustela vison*), can be found on USACE lands. The river otter is uncommon, and beaver, muskrat, mink, and weasel are not abundant. Beaver activity is higher in slough and river areas than in the lake. Muskrats are found primarily at the Pack River Delta and along the breakwaters at the Clark Fork Drift Yard. Mink nest in riparian habitats and along tributary drainages, but forage chiefly in marsh areas. In addition to these, numerous species such as shrews, mice, squirrels, rabbits, raccoons, voles, and bats are small mammals associated with riparian and upland habitats on USACE lands.

2.8.7.2.3 Reptiles and Amphibians

The variety of aquatic, riparian, and upland habitats support several species of reptiles and amphibians but in numbers notably less than in warmer regions of the United States. According to IDFG, 9 reptilian and 7 amphibian species are found in Bonner County (IDFG 2024), 9 species were found in a recent survey of USACE AFD lands (Lucas 2017). Of the reptiles, there are several species of lizards, non-poisonous snakes, the native painted turtle (*Chrysemys picta*), and the non-native snapping turtle (*Chelydra serpentina*). Commonly heard are Sierran chorus frogs (*Pseudacris sierra*) or western toads (*Bufo boreas*), which live near water. Also found are two species of salamanders, the long-toed and Coeur d'Alene (*Ambystoma macrodactylum* and *Plethodon idahoensis*, respectively).

2.8.8 Historic Properties

Protection of historic properties is a federal requirement as stated in Section 106 of the National Historic Preservation Act (NHPA), implementing regulations at 36 CFR §800. Historic properties and archaeological resources include sites, structures, objects, traditional cultural properties (TCP), and Historic Properties of Religious and Cultural Significance (HPRCSIT) that reflect both precontact and historic human habitation, as well as traditional knowledge and practices. These historic properties are non-renewable, making their preservation a priority.

- Historic Property is defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Section of the Interior.” This term includes artifacts, records, and remains that are related to within such properties.
- Traditional Cultural Property – a property that may be “eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community” (NPS 1990). The property must meet the requirements defined in 36 C.F.R. § 60.4 and Bulletin 38.
- Historic Properties of Religious and Cultural Significance to an Indian Tribe is a type of Traditional Cultural Property. Unlike a Traditional Cultural Property, to which any group or organization can ascribe significance, the term “*historic properties of traditional religious and cultural significance to an Indian tribe*” is used in Federal law and regulation to describe an historic property to which specifically an Indian tribe attaches spiritual or cultural value. Section 101(d)(6)(A) of the NHPA states that “*Properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined to be eligible for inclusion on the National Register.*” As with any historic property, a Historic Property of Religious and Cultural Significance to an Indian Tribe must be a property (i.e., be a physical place) and needs to have a history of use for traditional religious and cultural activities or association with

religious or cultural beliefs in the past. However, the property does not have to have been in continual use up to the present day, and its association with beliefs may have been revitalized in recent times after a period of quiescence or suppression.

AFD has an assigned Secretary of Interior (SOI) qualified archaeologist (Project Archaeologist) who has identified common threats to these resources, including landscape modifications, erosion, vandalism, and artifact collecting. In recent years, an increase in recreational activities, visitors, and pedestrian traffic have contributed significantly to the damage and loss of these resources.

Through the FCRPS Cultural Resources Program, AFD has its own Cooperating Group. The purpose of the Cooperating Group is to facilitate the exchange of views, technical information, and planning advice relating to compliance with the NHPA. Communications in the Cooperating Group also aid work planning, prioritization, and phasing of compliance activities. Discussions facilitate, but do not replace, Government to Government consultation.

The Cooperating Group works cooperatively to preserve, protect, and manage historic properties. USACE and BPA intend that the Cooperating Group's official approach and preferred methods for historic properties management will be a major consideration in the management and implementation of the FCRPS Cultural Resource Program. The agencies retain authority and responsibility for making decisions regarding implementation of Section 106 of the NHPA and the FCRPS SWPA.

The Cooperating Group provides professional expertise and local knowledge regarding planning and management of priorities in relation to the agencies' implementation of Section 106 of the NHPA and Section 3 of NAGPRA. Additionally, the Cooperating Group helps the agencies identify historic and traditional properties and determine the appropriate treatment, budget proposals, and timing of implementation, as well as review technical reports, documents, site forms, and participate in planning meetings, on-site field inspections, and other duties as required to implement the SWPA. Furthermore, the Cooperating Group recommends funding priorities using the annual budget and level of effort for work activities and provides professional and local expertise prior to the USACE drafting contract statements of work (SOW). Finally, the Cooperating Group recommends agreements, plans, and actions for the management of the impacts to historic properties resulting from O&M at AFD.

2.8.8.1 Consultation under Section 106

USACE adheres to the policies and procedures outlined in three primary legal agreements. The most frequently consulted agreement is the AFD Historic Properties Management Plan (HPMP). This strategic document is essential for managing and protecting historic properties by establishing the necessary policies, procedures, and actions to ensure legal compliance with the NHPA. The HPMP provides outlined procedures on inventory and assessment, legal compliance, preservation strategies, management goals and objectives, public engagement and education, monitoring and evaluation, funding and resources, and emergency management. The HPMP ensures effect management and protection of Historic Properties, balancing O&M needs with preservation goals.

The second agreement is the *Federal Columbia River Power System (FCRPS) Systemwide Programmatic Agreement for the Management of Historic Properties Affected by the Multipurpose Operations of Fourteen Projects of the FCRPS (SWPA)*. The SWPA provides a comprehensive framework for managing historic properties impacted by the operations and maintenance of the FCRPS projects. It outlines the responsibilities and procedures for compliance with the NHPA. The AFD HPMP acts as a specific operational plan that fulfills the broader commitments outlined in the SWPA, ensuring that the management of historic properties affected by the FCRPS is comprehensive, compliant, and collaborative.

The HPMP and SWPA fit into the framework of compliance with the NHPA as outlined in 36 CFR §800, the third agreement the Project Archaeologist will follow. This regulation establishes the procedures federal agencies must follow to consider the effects of their actions on historic properties. It includes requirements for identification, evaluation, consultation, and resolution of adverse effects. The Project Archaeologist follows these regulatory steps, ensuring compliance with the NHPA while effectively adhering to the policies and procedures provided by the SWPA and the HPMP. This structured approach promotes the protection of historic properties affected by federal undertakings and fosters collaboration among stakeholders throughout the process.

2.8.8.2 Coordination with Tribes

Consistent with 36 C.F.R § 800.14(f)(1), an affected Indian Tribe includes federally recognized Tribes that attach religious and cultural significance to historic properties potentially affected by the undertaking, and federally recognized Tribes with jurisdiction over Tribal lands on which the undertaking has the potential to affect historic properties. Federally recognized Tribes for the AFD area are the Kalispel Tribe of Indians, Confederated Salish and Kootenai Tribes of the Flathead Reservation, Kootenai Tribe of Idaho, and Coeur d'Alene Tribe of Indians.

2.8.9 Interpretation/Visual Qualities

The Visitor Center, built in 1995, replaced an older log-construction information center. It is located on a major highway route and is a gateway into the state of Idaho. The center is designed so that the restroom portion may remain open 24 hours a day every day of the week. The exhibit and theater areas are open to the public 7 days a week Memorial Day through Labor Day as staffing allows. In the fall, winter, and spring, these areas are open as staffing allows, typically Monday through Thursday. The center serves as the starting point for the dam and powerhouse tour. Interpretive exhibits inform visitors about USACE's role in hydropower, water storage, flood control, natural resource management and emergency response.

The interpretive services and outreach program at the AFD serves as a communication link between the public and USACE. The interpretive program is an effective management tool to inform the public of agency goals and uses interpretive messages to reveal the relationship the public has with the missions of USACE. The goal of the program at AFD is to inform the public of the multiple missions of USACE at AFD through exhibits, video productions, presentations, and publications.

2.8.10 Socioeconomics

Socioeconomic characteristics can influence the use and management of project lands and resources. For example, higher unemployment levels, lower incomes, and rapidly increasing population within the primary market area of project recreation sites would likely increase visitation, primarily for day use activities. These day-use resources include swimming beaches, boat launches, picnic areas, and active game areas/play fields. Conversely, lower unemployment levels or higher incomes could be expected to result in higher visitation from secondary/tertiary (remote) market areas and might include more campers. In addition, it's estimated approximately 20 to 25 percent of the campers are international visitors, primarily from Canada; therefore, the value of international currencies against the U.S. dollar might affect visitation. Those traveling to USACE lands from secondary and tertiary markets would be expected to stay for longer periods and require more services than those from the primary market area.

The following subsections provide a summary of socioeconomic conditions in the immediate region of influence of the Project (defined for the purpose of this plan as Bonner County, Idaho and Pend Oreille County, Washington). Some select additional state socioeconomic data is presented for Idaho and the neighboring states of Washington and Montana, as well as the Canadian Provinces of British Columbia and Alberta (Table 7).

Table 7. Demographic and Socioeconomic Information for Recreation Market Area. Data collected from Statistics Canada during the 2021 Canadian Census and the U.S. Census Bureau during the 2020 U.S. Census.

	POPULATION ESTIMATE	MEDIAN HOUSEHOLD INCOME	PERCENT BELOW POVERTY LINE	PERCENT MINORITY POPULATION
STATES / PROVINCES IN REGION				
British Columbia	5,000,879	\$C 85,000	10.8	34.4
Alberta	4,262,635	\$C 96,000	9.2	27.8
Montana	1,084,225	\$47,169	12.1	10.6
Idaho	1,839,106	\$47,583	10.7	9.0
Washington	7,705,281	\$61,062	10.0	22.7
MUNICIPAL				
Bonner County, Idaho	47,110	\$61,816	11.9	8.9
Clark Fork	513	\$47,411	23.7	8.2
Sandpoint	8,639	\$60,208	16.1	10.3
Priest River	1,696	\$49,868	8.1	8.1
Pend Oreille County, Washington	13,401	\$59,353	12.9	11.9
Newport	2,114	\$46,250	23.8	11.3
Ione	428	\$46,944	3.2	7.9
Metline Falls	162	\$72,500	14.1	2.5

2.8.10.1 Population and Demographics

Bonner County, Idaho had a population of 47,110 in 2020. The largest town is the county seat, Sandpoint, which contains approximately 18.0 percent of the county's population and resides on the shore of Lake Pend Oreille. Priest River is downstream of Sandpoint, along the Pend Oreille River and had approximately 18.3 percent of the County's population as of 2020. Clark Fork is on the Clark Fork River near close to its mouth in Lake Pend Oreille. The population of Bonner County increased by approximately 13.2 percent from 2010 to 2020 and has continued increasing by an average annual rate of approximately 0.9 percent since 2000 (U.S. Census Bureau 2020). If Bonner County were to increase in population at a similar rate as it has since 2000, the population in 2030 would be approximately 51,913. If the population in Bonner County were to increase at the Idaho annual average (5.5 percent), the population in 2030 would be approximately 58,842. Bonner County has a small minority population of 8.9 percent, predominantly Hispanic and Native American (U.S. Census Bureau 2020).

Pend Oreille County, Washington is sparsely populated and had a population of 13,401 in 2020. The largest town along the river is Newport, with approximately 15.8 percent of the county's population. The remainder of the population is dispersed among several other small towns and rural areas along the river and south. The population of Pend

Oreille County has increased by 2.9 percent from 2010 to 2020 and has continued increasing by an annual average of 0.3 percent since 2000. The State of Washington forecasted population is projected to increase by 23 percent 2010 to 2030 (Washington Office of Financial Management 2016). If Pend Oreille County were to increase in population at a similar rate as it has since 2000, the population in 2030 would be approximately 27,042. Pend Oreille County has a small minority population of 11.9 percent, predominantly Hispanic, Native American, and Asian. The Kalispel Indian Reservation is located north of Newport (U.S. Census Bureau 2010, 2015, 2020).

2.8.10.2 Income and Employment

Recreation and tourism are major components of the economy, with winter related recreation highlighted by the Schweitzer Mountain Resort ski area and summer recreation highlighted by Lake Pend Oreille and the Pend Oreille River. Major employers include Idaho Forest Group, Litehouse (food product manufacturing), Schweitzer Mountain Resort, Wal-Mart, government, and various health care and nursing facilities. Agriculture is also an important component of the economy. Table 8 presents Bonner County, Idaho and Pend Oreille County, Washington employment by sector. The sectors most likely affected by spending associated with project visitation are Retail, Services, Accommodations, and Recreation/Entertainment, which collectively account for approximately 35 percent of the County economy in Bonner County, Idaho and over 25 percent of the County economy as reported in Pend Oreille County, Washington.

Table 8. Percent Employment by Industry for the Primary Recreation Market.

INDUSTRY SECTOR:	PERCENTAGE	
	BONNER COUNTY, ID	PEND OREILLE COUNTY, WA
Agriculture, Forestry, Fishing, Hunting, and Mining	4.3	4.1
Construction	8.8	9.2
Manufacturing	13.4	8.3
Retail Trade	15.5	9.3
Transportation, Warehousing, and Utilities	5.6	7.0
Information	1.5	2.3
Finance, Insurance, Real Estate	4.9	4.4
Professional, Scientific, Management, and Administrative	6.4	6.5
Education, Health Care, and Social Services	19.3	22.1
Arts, Entertainment, Recreation, Accommodation, and Food Services	9.6	11.2
Other Services except Public Administration	4.6	3.4
Public Administration	3.6	10.0

The 2020 census reported that Bonner County's median household income to be \$61,816, 69 percent of the state average. Approximately 11.9 percent of the County's population lived below poverty level in 2020. For comparison, this rate was slightly higher than the state average of 10.7 percent (U.S. Census Bureau 2020).

Pend Oreille County, Washington is predominantly composed of the Colville and Kaniksu National Forests. Due to its remote location, it is not a major tourist destination, although some hunting and fishing takes place. Agriculture, manufacturing, and government are the dominant industries, including agricultural products such as hay, beef, and poultry.

In 2020, the median household income in Pend Oreille County was \$55,021, approximately 71% of the state's average. While a specific poverty rate for the county is not available for 2020 due to data collection issues during the COVID-19 pandemic, the U.S. Census Bureau's 2019-2023 American Community Survey indicates that 14.4 percent of the population lived below the poverty level during that period. This indicates a decrease from the 21.5 percent poverty rate recorded in the 2010 census, but it remains higher than the statewide rate of 9.8 percent in 2020 (US Census Bureau 2020).

2.8.10.3 Recreation Related Travel Spending

Idaho's Statewide Comprehensive Outdoor Recreation and Tourism Plan (ISPR 2013) reports that state travel spending has grown twice as fast as inflation, and out-of-state visitors made up the largest portion of total travel expenditures. Idaho residents are reported to expend less due to their higher proportion of day trips. Of all visitors, the largest portion of expenditures was made by visitors staying in commercial accommodations as opposed to public campgrounds. Although day travelers do not need overnight accommodations, they still contribute to the state and local economies through travel expenditures. All travelers also contribute to local and state governments since their spending dollars generate local and state tax revenues through the purchasing of goods and services.

Infrequently, USACE updates its Recreation Value to the Nation statistics highlighting social, economic, and environmental benefits of operating projects. Updated in fiscal year 2023, based upon an estimate of 451,850 visits per year, the following economic effects were calculated (presented in 2023 dollars):

- \$17.8 million in visitor spending within 30 miles of Lake Pend Oreille Lake and the Pend Oreille River
- \$10.3 million in sales within 30 miles of the lake and river
- 121 jobs within 30 miles
- \$4.2 million in value added within 30 miles (wages and salaries, payroll benefits, profits, rents, and indirect business taxes)

With multiplier effects, visitor trip spending resulted in the following:

- \$17.9 million in total sales
- \$4.6 million in total income
- 169 jobs in the local community surrounding the lake.
- \$7.8 million in value added (wages and salaries, payroll benefits, profits, rents, and indirect business taxes).

The money spent by visitors to the project area contributes to the local and national economies by supporting jobs and generating income.

2.8.11 Recreation

2.8.11.1 Recreation Facilities and Activities

USACE owns and manages seven recreation areas, including four developed campground/day-use areas, and three day-use only areas (Table 9). Albeni Cove, Priest River, Riley Creek, and Springy Point have a variety of day-use facilities and campsites with basic amenities (picnic tables, fire-rings, nearby potable water). All park attendant sites have full hook-ups. Riley Creek campsites have water and power at each campsite. The other three campgrounds do not have hookups. The Vista and Trestle Creek areas are day-use areas only. Morton Slough, Hawkins Point, the Clark Fork Drift Yard, and Johnson Creek (managed by IDFG) provide a restroom and boat launch facilities. Johnson Creek and the Clark Fork Drift Yard offer dispersed camping with a 3-day limit.

Table 9. USACE recreational facilities on Lake Pend Oreille and the Pend Oreille River.

RECREATION AREA	SIGHTSEEING	PICNIC AREA	PICNIC SHELTER	FISHING	BOAT LAUNCH RAMP	SWIMMING	CAMPING	TRAIL
Albeni Cove	•	•		•	•	•	•	
Priest River	•	•	•	•	•	•	•	
Riley Creek	•	•	•	•	•	•	•	•
Springy Point	•	•	•	•	•	•	•	
Vista Area/Visitor Center (day-use)	•	•		•				•
Trestle Creek (day-use)	•	•		•	•	•		
Morton Slough	•	•		•	•			
Johnson Creek	•	•		•	•		•	
Clark Fork Driftyard	•	•		•	•		•	
Hawkins Point	•	•		•	•			

2.8.11.2 Visitation Profile

As presented in section 2.8.10, recreation and tourism associated with Lake Pend Oreille and its resources are a major contribution to the economic base of the region. The lake is situated in the Panhandle Region of northern Idaho, with east-west and north-south rail and highway routes linking other major northwest tourist attractions. Lake Pend Oreille lies approximately in the center of a 400-mile-radius circle that includes several Canadian National and Provincial Parks as well as Yellowstone, Grand Teton, Glacier, Crater Lake, Mount Rainier, Olympic, and North Cascade National Parks in the United States. Also, within the 400-mile-radius circle are the cities of Spokane, Seattle, Victoria and Vancouver, the Olympic Peninsula, and the San Juan Islands of the Puget Sound area, the Mount St. Helens volcano, Grand Coulee and Bonneville Dams, the Rocky and Cascade Mountains, and the primitive wilderness areas of central Idaho.

2.8.11.3 Recreation Analysis

The location and distribution of recreation sites influence management strategies, including developed recreation areas (such as Riley Creek, Priest River, or Trestle Creek) and undeveloped natural areas. The developed recreation areas are in proximity to local population centers with good accessibility from Federal and state highways. The proximity of recreation areas to population centers significantly influences their popularity and types of use. Two project recreation areas, Albeni Cove and Priest River, are close to the towns of Newport, Washington and Priest River, Idaho, respectively. They receive heavy day-use from the local population with the swimming beaches as a major attraction. Two other sites (Riley Creek and Springy Point) are both roughly 5 to 10 miles from the nearest town. Each has swimming beaches and boat ramps used by both overnight campers and the local population.

The recreational facilities in the project area are provided by a mix of Federal, state, and local agencies, as well as private enterprises. However, growing demands for recreation opportunities continue to stress the present system, especially in the most popular areas. The desire to camp, boat, day hike, swim at a beach, and picnic is increasing in Idaho at a rate similar to or even greater than population increase. The greatest desires are for areas offering public access to water, trails, natural areas, and fish and wildlife habitat.

Persons living within the “primary market” area roughly within a half-hour travel time to the lake, or within a 20 to 30-mile radius. For purposes of subsequent analysis, the primary market area is defined as Bonner County, Idaho, and Pend Oreille County, Washington. Within this primary market area are the city of Sandpoint and the towns of Priest River, Hope, East Hope, Clark Fork, Kootenai, and Ponderay, Idaho, and Newport, Washington.

The “secondary market” consists of the area outside the primary market within approximately 100 miles or 2 hours travel distance to Lake Pend Oreille. Specifically, the secondary market includes six Washington counties, seven Idaho counties, three Montana counties, southern Alberta, and the southeastern part of British Columbia. The major population centers of the secondary market include Spokane, Washington, and Coeur d’Alene, Idaho.

The Panhandle Region of Idaho offers recreationists a wide variety of outdoor experiences set in a background of outstanding natural beauty. As noted earlier, camping and day-use facilities are provided by USACE and other Federal, state, and local agencies. To determine the need for new recreation facilities on USACE lands, it is necessary to look at existing public and private recreation facilities in the vicinity.

Idaho is heavily used by out-of-state recreationists (73 percent), particularly in the Panhandle Region of Idaho (ISPR 2013). A major share of this nonresident use occurs at overnight camping facilities. Examination of 2016 Summer Season camping reservations at AFD indicate that approximately 43 percent of overnight campers are from Washington, 18 percent are from Idaho, and 20 percent are from Canada, followed by 2 to 3 percent use by residents of California, Montana, and Oregon, with all other states contributing about 10 percent. International visitors, which are primarily from Canada, tend to stay longer than U.S. residents do.

2.8.11.4 Recreational Carrying Capacity

The shoulder seasons are May through June, and after Labor Day through to the end of September with weekends providing the highest amount of visitation by both campers and day-users. Campground usage is higher on weekends than on weekdays. This is also true in the day-use areas like Vista and Trestle Creek Recreation Areas. The higher weekend use can be attributed to use by local commuting area residents and organized groups that reserve picnic shelters at Priest River, Riley Creek, and Springy Point for functions on weekends.

Starting in 2019, information regarding public camping on USACE lands became more readily available with the addition of a new on-line nationwide reservation system (<https://www.recreation.gov>). During the 2020 pandemic, AFD recreation areas transitioned to a 100 percent reservable campsite model. Prior to 2020, USACE offered the public up to 60 percent reservable camp sites that needed to be reserved 3 days in advance. The remaining 40 percent of camp sites were offered to the public as first come, first serve. There is no longer a 3-day reservation window. The new on-line reservation system also demonstrates that very few nights remain unreserved during the summer months and that July is the busiest month (Figure 7).

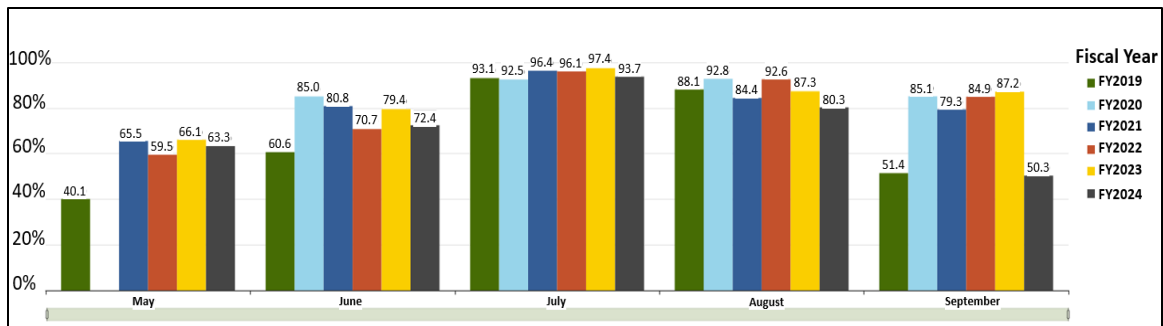


Figure 7. Graph showing public usage of camp sites by month and calendar year at Albeni Cove, Priest River, Riley Creek and Springy Point Recreation Areas (information accessed from <https://www.recreation.gov> on June 28, 2024).

At each facility the carrying capacity is mainly determined by the number of parking slots and campsites available, and by this standard AFD's facilities reach capacity most summer weekends. However, during extremely busy times Park Rangers will park cars on road shoulders and in the case of Riley Creek, staff has converted the two-way road into one-way to allow parallel parking in the opposite lane. Park Rangers will close the day-use access roads and create a one-vehicle-out, one-vehicle-in procedure at all recreation areas when parking lots are full, and the road shoulders have reached capacity for safety reasons. This procedure is maintained until enough vehicles have departed to allow parking in a normal fashion. This scenario, although historically not frequent, is becoming more frequent as the population grows and the need for access to recreation rises.

2.8.12 Real Estate

Real estate considerations influence land and resource management at AFD. These considerations include the quantity of USACE-owned in fee title ("fee lands"), outgrants, and the ownership and use of adjacent lands. USACE administers 4,241 acres (fee lands) in multiple parcels, most of which have some amount of shoreline. However, during summer pool, only about 959 acres (23 percent of the total USACE-owned acreage) are above water. This limited land base must be managed to address recreational and environmental uses.

2.8.12.1 Land Acquisition History

Under the Flood Control Act of 1950 (PL 81-516), USACE acquired large acreages of land for the AFD project. At the time of acquisition, it was the desire of the administration that new land be restricted to the minimum amounts required for operations, maintenance, and to meet foreseeable public access demand. Original acquisition criteria followed by USACE were generally consistent with that policy. The initial authorized project purpose, as set forth in PL 81-516, Title II, was "*for the benefit of navigation, and the control of destructive floodwaters and other purposes.*" All USACE lands were originally allocated to project operations, in accordance with the initial acquisition purposes.

2.8.12.2 Current Landholdings

Physical resources consist of 4,241 acres of land and water in fee title located along the Pend Oreille River and the north side of Lake Pend Oreille. The Pend Oreille River includes the 29-mile section between the AFD and Lake Pend Oreille. The lake itself is a 94,600 surface-acre reservoir providing approximately 226 miles of shoreline. The property administered by USACE consists of 23 non-contiguous parcels ranging in size from 2 acres or less (Muskrat Lake, C-322 parcel), to 1,375 acres (Pack River Delta). In addition, USACE administers approximately 9,426 acres of easement land around the lake and river, managed for the effects of normal project use and operation.

2.8.12.3 Boundary Monumentation, Encroachments, and Trespass

There are boundary lines that establish fee land boundary lines from surveys delineated by official monuments, and there are boundaries delineated by physical or natural features such as railroads, roadways, rivers, or the lake. Several management areas, such as Strong's Island, Carr Creek, and the North Shore Strips, are delineated almost entirely by a physical or natural feature.

USACE-owned lands were partially surveyed and monumented in the 1970s. Several areas that were missed were revisited in the 1980s for 100 percent completion of the surveys. In 2000, areas that had questionable or missing monuments were identified; these areas were resurveyed in 2000 and 2001 by USACE surveyors and contract surveyors and monuments or pins re-established. In addition, project personnel inspect USACE-managed lands while conducting routine activities. As part of inspections, monument locations are checked, and a list kept of missing or damaged monuments. Due to the unfamiliarity of the existing boundary lines, it is anticipated that some lines will need to be identified first with a return trip for delineation. Other lines, such as those around the major recreation areas, are well established and known. These areas are delineated with Carsonite markers (2.6-inch-wide flat post type sign) indicating the break from private property to public property. A determination on the type of delineation for the other areas will depend on the natural and physical features, and aesthetic concern.

Encroachments are defined as unauthorized structures or construction that occur on USACE-owned Project lands. These include building, road, pond, utility (water, sewer, electrical) line, fences, docks, etc. Encroachments have also occurred on easement lands where habitable structures have been constructed in easement areas in violation of the terms of the easements. Trespass is unauthorized transient use such as livestock grazing, mowing, planting, camping, abandoning personal property, timber cutting and removal, etc. Easement encroachments and trespass are identified through inspections by USACE staff or out-grantees. Encroachments are resolved through personal visits and verbal communication or by written communication by the project staff or Real Estate personnel. Trespasses are resolved by verbal or written communication, citation, or confiscation. Encroachments and trespass may also be resolved through the lifting of restrictions (particularly in easement violations), through outgrants, or through disposal

actions. Records including letters, memoranda and maps are maintained for all violations.

2.8.12.4 Fences and Gates

Fencing is used on USACE lands to delineate property boundaries, prevent livestock trespass, and for security purposes. Fencing may consist of four-strand barbed wire, smooth galvanized wire, or cyclone (chain-link) fencing. Due to the rough terrain and fluctuating reservoir levels, fencing all boundaries is not cost effective. Gates are installed throughout USACE owned lands to provide security. They are also used to keep vehicles from entering during seasonal closures or to areas where vehicular access is not permitted.

2.8.12.5 Leases, Easements, Outgrants, and Ingrants

Many leases, easements, and outgrants have been granted to public utilities and individuals for a variety of uses, including access roads, power transmission lines, and utility lines. Development and use of land by others outside of USACE may be allowed when in accordance with this approved Master Plan. Use must be consistent with policies, procedures, and regulations prescribed by USACE. Prior to USACE approval, any future leases, easements, and outgrants must be carefully examined to ensure compatibility with project resource objectives and updated land classifications.

ER 1165-2-400 states: *“The traditional policy of the Corps [USACE] has been to encourage non-federal participation in the administration of recreation opportunities provided at Corps [USACE] projects. Since 1944, the Corps [USACE] has entered into leases which permit state and local development and administration of recreation areas at Civil Works projects.”* AFD includes outgrants consisting of 4,075 acres (96 percent of the total USACE-owned lands at AFD). The current license with IDFG for management of USACE-owned lands in Wildlife Management Areas (4,046 acres) extends to September 30, 2033. The remaining outgrant acreage (29 acres) are for parks and other purposes. Management of outgranted lands and associated resources must remain consistent with the resource objectives and land use classifications provided in this Master Plan.

2.8.12.6 Adjacent Land Use and Ownership

Neighboring land use and ownership can influence development and management of USACE lands. In some cases, adjacent uses will have a positive influence. For example, private marina and resort facilities complement the day use facility and boat launch at the Trestle Creek management area. The private facilities provide concessions and services while the public facility provides public access and restrooms in a popular resort and fishing area of the lake. In other cases, neighboring land use can exert a negative influence. Industrial activity, developments, railroads, and highway traffic near or adjacent to existing or potential recreation sites can influence the value and enjoyment of the outdoor recreation experience. Noise and visual impacts can be strong constraints in the planning and siting of campgrounds, picnic areas, and other use areas. The wood-products plants located adjacent to or relatively near existing recreation sites

at Priest River and Riley Creek, respectively, are discordant land uses. Industry-related noises affect the level of enjoyment of visitors to these recreation sites. Noise and traffic generated by public recreation sites can also negatively affect adjacent residential neighborhoods.

Offsite influences can be minimized or eliminated if considered ahead of time. Zoning, ownership, and current use plans of adjacent lands must be known before development of potential recreation areas, as well as land use changes or proposals, which might affect recreational and wildlife resources. Responsible state and local planning officials should be alerted when such proposals might endanger existing project resources or proposed improvements.

2.8.13 Management Plans

Several management plans direct activities and expenditures for USACE owned and managed lands in and around AFD's Reservoir. These plans are interrelated and discussed in the following paragraphs. Each must be considered when planning future actions.

2.8.13.1.1 Operational Management Plan

The Operational Management Plan is a management action document that describes in detail how the resource objectives and concepts prescribed in this Master Plan will be implemented. Under the umbrella of the Operational Management Plan are the following supplemental management plans:

- a) *Historic Property Management Plan* – The purpose of the document is to ensure the preservation of historic properties at the project by inventories, evaluation of sites for eligibility on the National Register of Historic Places, and mitigation. The plan addresses, among other topics, the background of the area, program evaluations, operating plans, schedules, funding, and coordination. The Project Archaeologist is revising the 2008 version of the HPMP.
- b) *Wildlife Management Plan* – The primary purpose of the Wildlife Management Plan is to assist the Natural Resource Managers at AFD in meeting the goals of wildlife protection and habitat preservation. Wildlife program priorities include two major categories: (1) Natural resources management to include conservation and damage prevention, recreation, hunting, and fishing; and (2) species inventorying and monitoring.
- c) *Pest Management Plan* – The Pest Management Plan is the formal, integrated pest management program for the AFD Project. The program addresses noxious weeds, insects, and wildlife related problems. The latest update to the Pest Management Plan was in 2010. The herbicide and invasive species portions are updated annually. A Pest Management Plan is needed.
- d) *Vegetation Management Plan* – The primary purpose of the Vegetation Management Plan is to assist the Natural Resource Managers to improve the current conditions based on sound management practices and scientific data, providing for the perpetuation of the forest resources under multiple use

conditions. The latest update to the Vegetation Management Plan was in 1995. The “Hazard Tree” portion of the plan is updated annually and information regarding hazard trees is provided in Appendix E.

2.8.13.1.2 Regional Resource Management Plans

- a) *Columbia River Basin Technical Management Team* – The Technical Management Team is an inter-agency technical group responsible for making recommendations on dam and reservoir operations within the Columbia River Basin. The Technical Management Teams’ mission is specifically to ensure broad technical participation and use of the best available technical information, and to encourage regional consensus on technical recommendations regarding FCRPS operations.
- b) *Federal Columbia River Power System Biological Opinions*. NMFS and USFWS issued biological opinions on the Columbia River System operations in July 2020 (NMFS 2020; USFWS 2020). In the biological opinions, the Services evaluated effects to ESA-listed species for the ongoing O&M of 14 Federal dams, including AFD, and provided Reasonable and Prudent Measures to avoid or minimize these effects.
- c) *Federal Columbia River Power Systemwide Programmatic Agreement for the Management of Historic Properties affected by the Multipurpose Operations of Fourteen Projects of the Federal Columbia River Power System for Compliance with Section 106 of the National Historic Preservation Act*. This Programmatic Agreement (PA) provides a mechanism for streamlining compliance with Section 106 of NHPA (USACE 2009).
- d) *Idaho State Wildlife Action Plan* – The Plan is intended to conserve fish and wildlife by helping landowners, resource-based industries, and land management agencies to choose programs and on-the-ground activities that benefit those species that need the most help. All guidance, strategies, and actions suggested in the Action Plan are voluntary and will help prevent future endangered species listings (IDFG 2024a).
- e) *IDFG Fisheries Management Plan* – The Plan describes the management direction of IDFG and is the guiding policy document for fisheries activities over a 5-year period (2025-2030). The goals, objectives, and deliverables identified in this Plan reflect the desires of anglers and other interested stakeholders regarding conservation and management of Idaho’s aquatic resources to benefit the public (IDFG 2024b).
- f) *Pend Oreille Wildlife Management Plan* – The Pend Oreille WMA is managed by IDFG to protect wildlife habitat and provide public access for hunting, fishing, and other outdoor recreational pursuits (IDFG 2014). IDFG intends to reevaluate the plan in 5-year increments and to modify as needed to accommodate changing conditions and goals and to incorporate available advancements in management knowledge and techniques.

3 RESOURCE OBJECTIVES

Sound stewardship requires the development and management of project resources for the public benefit consistent with resource capabilities. As the steward of the lands and waters at USACE water resource projects, the *Natural Resource Management Mission* is “to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations” (ER 1130-2-540). The Master Plan provides resource objectives for the stewardship of project resources, both natural and human made. Resource objectives are realistically attainable outcomes for the use, development, and management of natural and human-made resources. Resource objectives are developed with full consideration of authorized project purposes, applicable Federal laws and directives, resource capabilities, regional needs, plans and goals of regional and local governmental units, and expressed public desires. These objectives enhance project benefits, meet public needs, and foster environmental sustainability.

The over-arching project-wide resource objective for AFD is to continue to provide benefits to the public from the congressionally authorized purposes of “*Flood Control, Navigation, Conservation, Recreation, and Power Generation.*” These benefits should be provided in a safe, effective, and efficient manner.

The following is a list of over-arching resource objectives for the AFD Project:

- Continue the provision of project benefits, including flood control, fish and wildlife, and recreation, throughout the life of the Project.
- Provide the best combination of resource uses and project operations to meet the needs of the public.
- Provide for the management of natural resources associated with the Project to include the protection and preservation of native habitat, the protection of water quality, and the implementation of programs to manage wildlife species.
- Promote the public’s use of the Project for both non-consumptive uses (e.g., hiking, wildlife viewing) and consumptive uses (e.g., fishing).
- Promote public education concerning the Project’s human-made and natural resources.
- Protect and conserve historic properties and archaeological and tribal resources.
- Conserve, protect, monitor, restore, or enhance habitat and habitat components important to the survival and proliferation of threatened, endangered, special status, and other regionally important species.
- Control shoreline erosion.
- Prevent unauthorized use of government property through boundary management.

In addition to the above encompassing resource objectives, the following sections summarize objectives for specific areas or land classifications.

3.1 DAM AND OPERATIONS STRUCTURES

- Maintain the operational integrity of the dam and related facilities.
- Interpret USACE's missions for visitors.
- Provide for low intensity recreation that does not hinder the operation or security of the project.

3.2 RECREATION AREAS – HIGH DENSITY

- Maintain and enhance educational, recreational, and sanitary facilities for project visitors while improving visual quality of facilities and site.
- Upgrade and maintain site facilities and provide expanded recreation opportunities.
- Reduce conflicts between activities in different zones by increasing efficiency and aesthetics.

3.3 RECREATION AREAS – LOW DENSITY

- Increase the value of day-use recreation areas with special emphasis on maintaining high quality facilities and improving upon these facilities and operations.

3.4 WILDLIFE MANAGEMENT AREAS

USACE-owned lands categorized as WMAs are under a 25-year management license to the IDFG for the conservation and management of wildlife resources. The license with IDFG extends to September 30, 2033. The following are management priorities of IDFG:

- Management of wetlands habitats for waterfowl production.
- Provide wildlife-related recreation access, particularly for public hunting, fishing, and wildlife observation.
- Management of wetland and upland habitats for a variety of non-game wildlife species.
- Provide habitat for migrating and wintering waterfowl.

In 2014, IDFG updated their management plan for the Pend Oreille Wildlife Management Area, which encompasses USACE-licensed properties as well as other properties owned by the state or other Federal agencies. The Pend Oreille WMA is managed *“to protect wildlife habitat and provide public access for hunting, fishing, and other outdoor recreational pursuits.”* Habitat management emphasis has primarily been for waterfowl production and protection of wetland areas used by migrating birds in the spring and fall.

The following USACE's objectives for the management of wildlife areas work in concert with IDFG's management objectives:

- Provide non-consumptive recreational uses such as hiking, wildlife viewing, photography, and sightseeing that are consistent with the Wildlife Management classification objectives.

- Provide access for consumptive use.
- Promote ecological integrity and native habitat diversity and maintain quality habitat for native species.

4 LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE, PROJECT EASEMENT LANDS AND DESIGN CRITERIA

4.1 GENERAL

The AFD Project has a total of 18,708 acres. Of those, 4,241 acres are fee title acres of land and water, with 4,046 acres in outgrants. Fee lands consist of numerous non-adjacent parcels situated along both banks of the Pend Oreille River, and the northern shore of Lake Pend Oreille. Of the remaining 13,667 acres, 5,041 acres are USFS or Bureau of Land Management withdrawal lands, and 9,299 acres are flowage easements.

USACE lands represent only about 11 percent of the Lake Pend Oreille/Pend Oreille River shoreline. The pie chart below (Figure 8) illustrates the percentage of land owned or operated by someone other than USACE. Approximately 59 percent of the shoreline is privately owned, 15 percent is railroad and highway embankment, 13 percent is owned by the USFS, and 2 percent is in state and municipal ownership.

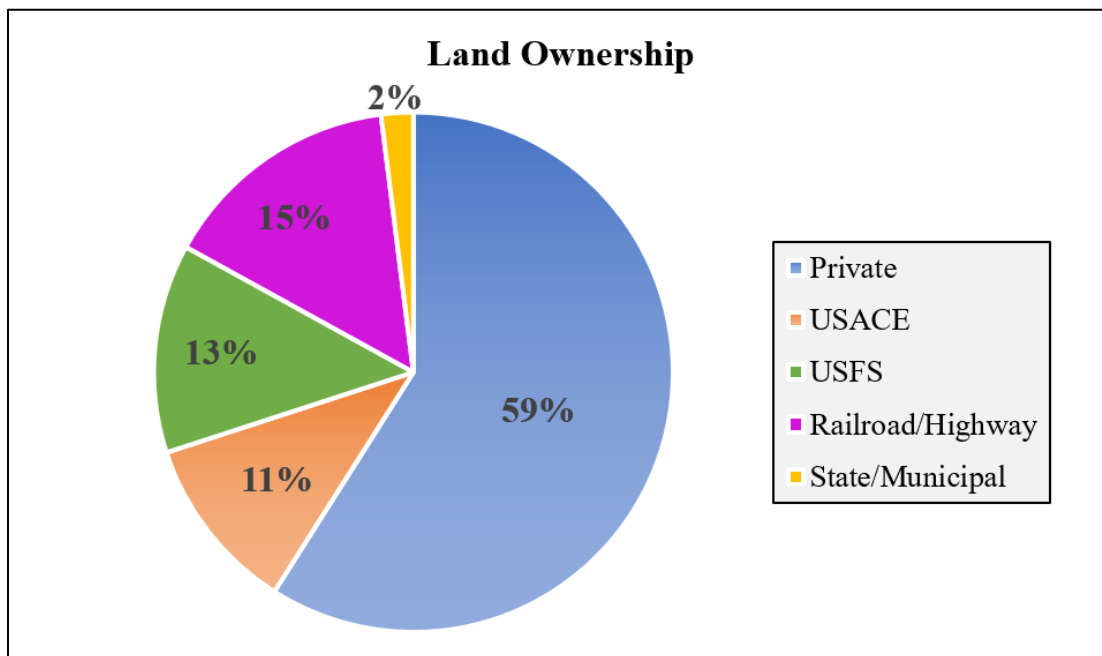


Figure 8. Area Lands Ownership Adjacent to Lake Pend Oreille and the Pend Oreille River.

4.2 LAND ALLOCATION

Land administered by USACE is allocated to any of four categories depending on the congressionally authorized purpose for which they were acquired. These are defined as Operations, Recreation, Fish and Wildlife, and Mitigation. AFD was authorized for construction as a multiple-purpose project that includes power generation, navigation, flood control, recreation, and fish and wildlife conservation. Maps of the land administered by USACE are in Figure 3 & 4 (section 1.2).

4.2.1 Operations

All AFD and Pend Oreille Reservoir lands are allocated to Operations.

4.2.1.1 Easement Lands

Approximately 9,299 acres in flowage easements were acquired on private lands around the reservoir for the purposes of accommodating wave action, erosion, ground water effects and other water surface elevation adjustments that might occur because of the operation of AFD. In effect, the easements provide a 5-foot "freeboard" above the regulated maximum pool (2,062.5 feet MSL), which gives the Federal government the ability to intermittently inundate lands below elevation 2,067.5 feet MSL without liability for damage to private property within the easement area. Key to this right was a provision that prohibited construction of dwellings having a first-floor elevation below 2,067.5 feet MSL and within the legally described easement areas.

Wave damage and significant shoreline erosion in the mid-1950s led USACE to acquire additional easement rights, or construct bank protection, in the late 1950s and early 1960s to provide a higher level of protection in erosion prone areas. These easements were acquired landward of the initial flowage easements and contained provisions prohibiting "*dwellings for human habitation*." Approval was required from USACE for non-habitable structures and other improvements within the "*no-habitation*" easement areas. These "*no-habitation*" or "*second*" easements were not tied to a specific elevation or contour line but were based on engineer or geotechnical estimates of future erosion limits for the specific area. Approximately 100 individual tracts of land were initially covered by these "*no-habitation*" easements; however, as the shoreline was developed and large tracts of land subdivided, the number of individual owners increased to approximately 300 by 1989.

For a variety of reasons (inaccurate legal descriptions, lack of boundary markers, incomplete title investigation, etc.), a significant number of dwellings were discovered that were built in violation of the no-habitable structure restriction. In the mid-1980s, a boundary marker or encroachment resolution effort was initiated by USACE with a goal of reestablishing and placing property boundary markers, including easements, and resolving the encroachments created by these dwellings. Funding was reduced and efforts to mark boundary lines ceased after 2 years. However, efforts to deal with encroachments continued. The result was a program to "release" the no-habitable structure restriction from the second easement areas while retaining the equivalent of

the standard flowage easement over the area. Owners are provided with a “*Deed of Release*” in return for providing a release of liability to the Federal government for any future damages associated with the operation of the AFD Project. This is an on-going effort.

During the evaluation process described above, USACE determined the 2,067.5 feet MSL first-floor elevation restriction included in the flowage easement was not necessary in the river arm of the reservoir downstream of the "long" bridge (U.S. Highway 95 Bridge) at Sandpoint. USACE decided to lower the restrictive elevation for this area to 2,065.0 feet MSL and issue Deeds of Release to the shoreline owners, again in return for the release of liability. This process is subject to the availability of funding and labor. The 2,067.5-foot MSL first-floor elevation restriction remains on the rest of the reservoir shoreline.

4.2.1.2 Public Domain Lands

Approximately 5,138 acres of public land were placed into withdrawal under Public Land Order (PLO) 1703 dated August 8, 1958. These lands are managed by USFS Panhandle National Forest, or the U.S. Department of Interior, Bureau of Land Management (BLM). The jurisdiction of USACE over withdrawal lands is limited to flowage purposes in connection with AFD. There is no active USACE management on these lands. Of the total acreage, about 2 acres were disposed of in June 1971 (PLO 5063; reasons for disposal unknown). In 1994, approximately 60 acres of lands owned by USFS near Thama were relinquished, reducing the total acreage to about 5,076 (PLO 7049). About 35 acres owned by the BLM were relinquished in 1995 (PLO 7173), and less than 1 acre in 2009 (PLO 7722), reducing the total acreage in withdrawn lands to the current 5,041 acres.

4.2.1.3 Other Operational Lands

Fourteen additional acres are held in easement by USACE for other operational purposes. These acres include in-grants, located within the vicinity of the powerhouse. These in-grants consist of easements for utility rights-of-way and other facilities located on or crossing Burlington Northern Railroad right-of-way. Total in-grant acreage is approximately one acre.

4.2.1.4 Boundary Survey and Management

Boundary surveys and marking of Federal property (signs or fencing) is an ongoing effort to aid managers and inform visitors where specific activities are acceptable and aid in prevention of encroachments and trespasses.

As described above, USACE owns 4,241 acres of land and water in fee title (called “fee lands”) located along the Pend Oreille River and the north side of Lake Pend Oreille (Table 10).

Table 10. AFD Land Classification (Fee Acres). Management areas identified as WMAs are licensed to IDFG to manage under the Pend Oreille WMA.

MANAGEMENT AREA**	OPERATIONS	HIGH DENSITY RECREATION	MRM – WILDLIFE MANAGEMENT AREAS	MRM – LOW DENSITY RECREATION	ENVIRONMENTALLY SENSITIVE AREAS ⁹	BELOW 2,062.0 FEET MSL	TOTAL
Vista Area	17.4	4.8		18.3	0.9		40.5
Albeni Cove		39.2			9.4	9.4	39.2
Northshore Strips WMA			22.4		12.7		22.4
Strong’s Island WMA			31.1		12.1	13.1	31.1
Priest River		22.7			2.8		22.7
Priest River WMA			114.7		82.7	86.0	114.7
C-322 WMA			0.4				0.4
Carey Creek WMA			60.6		44.4	46.7	60.6
Riley Creek		48.2			1.3		48.2
Riley Creek WMA			150.3		118.9	117.1	150.3
Hoodoo Creek WMA			82.0		52.1	53.0	82.0
Morton Slough WMA			392.9	9.0	303.8	349.3	401.9
Mallard Bay WMA			47.9		39.1	44.0	47.9
Muskrat Lake WMA			2.0		2.0	1.0	2.0
Carr Creek WMA			14.7	0.7	12.3	11.3	15.3
Hornby Creek WMA			30.9		21.7	19.3	30.9
Springy Point		32.2			17.8	21.5	32.2
Ponder Point WMA			5.6		2.6		5.6
Oden Bay WMA			397.8		317.4	324.2	397.8
Pack River Delta WMA			1,374.8		1,246.1	1,255.0	1,374.8
Hawkins Point				0.2			0.2
Trestle Creek		8.8			6.6	7.3	8.8
Clark Fork River Delta WMA	59.4		1,243.2	8.8	768.4	580.6	1,311.4
Total Fee Acres	76.9	155.9	3,971.3	37.0	3,074.9	2,938.7	4,241.0

⁹ Due to an overlap in land classifications, the acreage for Environmentally Sensitive Areas and Below 2,062.5 feet MSL elevation are included in the totals for other classifications. These columns identify the acreages of each area that are classified as an environmentally sensitive area, or flooded at high pool, and one of the other classifications. The acreages in these columns should not be used when computing totals as these numbers are already included in one of the other classifications.

4.2.1.5 Encroachments

Encroachments are defined as unauthorized use that has occurred on USACE-owned Project lands. These include structures, livestock, waterlines, driveways, etc. Encroachments have also occurred on easement lands where habitable structures have been constructed in easement areas in violation of the terms of the easements. Easement encroachments are identified through inspections by boat and surveys. Encroachments are resolved through personal visits and verbal communication by the AFD Project staff and Real Estate personnel or by written communication by AFD Project staff or Real Estate personnel. Encroachments may also be resolved through the lifting of restrictions (particularly in easement violations), through out-grants, or through disposal actions. Records including letters, memoranda, and maps are maintained for all violations.

4.2.2 Recreation

This classification includes lands acquired specifically for the congressionally authorized purpose of recreation. AFD does not have lands specifically acquired for recreation. However, USACE is authorized to construct, maintain, and operate public park and recreational facilities in reservoir areas, and to permit the construction, maintenance, and operation of such facilities (P.L. 58-665). In addition, water areas of all such reservoirs shall be open to public use generally, without charge, for boating, swimming, bathing, fishing, and other recreational purposes (P.L. 58-665). Recreation features on Operation Lands are described below under Land Classification.

4.2.3 Fish and Wildlife

This classification includes lands acquired specifically for the congressionally authorized purpose of fish and wildlife management. AFD does not have lands specifically acquired for fish and wildlife management. However, AFD was authorized for construction as a multiple-purpose project that includes power generation, navigation, flood control, recreation, and fish and wildlife conservation (P.L. 81-156). These features on Operation Lands are described below under Land Classification.

4.2.4 Mitigation

This classification includes lands acquired or designated specifically for the congressionally authorized purpose of offsetting losses associated with the development of the project. AFD does not have lands specifically authorized for mitigation.

4.3 LAND CLASSIFICATION

Allocated land is broken down further into classifications to provide for development and resource management consistent with authorized purposes and the provisions of the National Environmental Policy Act of 1969, as amended, as well as other Federal laws. Classification categories at AFD include Project Operations, Recreation, Environmentally Sensitive Areas, Multiple Resource Management (MRM) Lands and

Easement Lands. General overview maps of land classifications can be found in Figure 9 and Figure 10.

4.3.1 Project Operations

The Project Operations category includes those lands required for the O&M of the dam and reservoir, associated structures, administrative offices, maintenance compounds, and other areas under the Project Operations classification. Where compatible with operational requirements, this land may be used for wildlife habitat management and low-density recreational uses. Licenses, permits, easements, or other out-grants are issued only for uses that do not conflict with operational requirements. Some Project Operations lands are always closed to public access for safety or security reasons, while other areas may be subject to closure for operational requirements or other purposes. Motorized recreation within Project Operations land is allowed only on designated routes.

4.3.2 High Density Recreation

Land developed for intensive recreational activities for visitors, including day use or overnight facilities, commercial concessions, and quasi-public development. High Density Recreation at AFD are areas with improved road access, more than 15 campsites, or allow for intensive day use. Motorized access is allowed only in designated areas, subject to seasonal or permanent closure based on road conditions, presence of important species that would be impacted by the presence of motorized vehicles, or other reasons deemed appropriate by USACE staff.

Facilities may include developed campgrounds, separate day use facilities, lake access for boats, marina facilities and services, opportunities for the elderly and handicapped to participate in a variety of activities, trees for shade and wildlife use, and vegetative controls for shoreline and soil erosion. Criteria such as spacing, buffer zones, vegetative screening, and other considerations are used in the design of facilities to ensure visitors have adequate access to the lake and a quality experience.

4.3.1 Environmentally Sensitive Areas

Environmentally Sensitive Areas are those areas where scientific, ecological, historic, or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as Endangered Species Act, the National Historic Preservation Act or applicable State statutes. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration. These areas are typically distinct parcels located within another, and perhaps larger, land classification area.

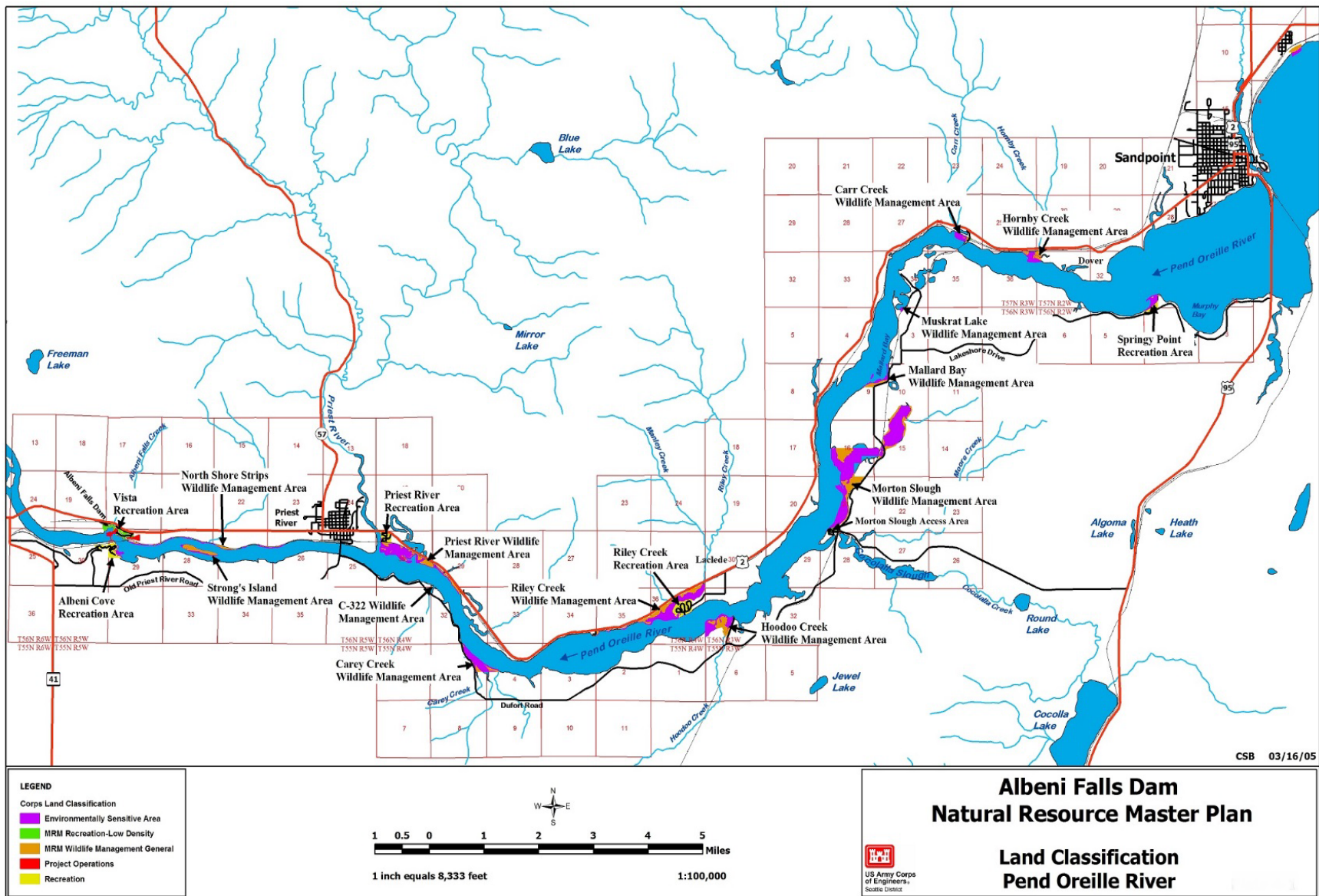


Figure 9. Land Classification of Management Units on the Pend Oreille River.

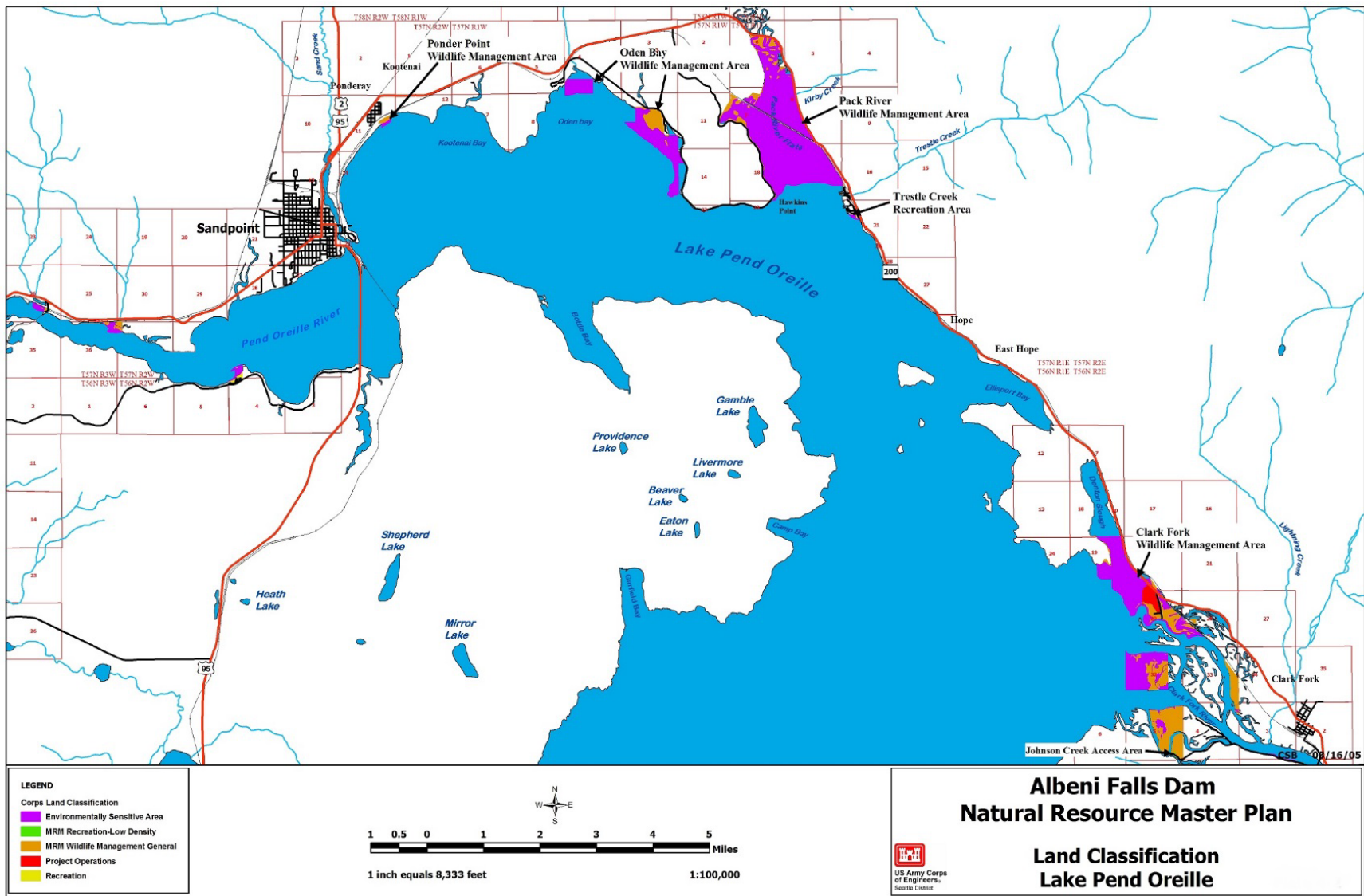


Figure 10. Land Classifications of Management Units on Lake Pend Oreille.

4.3.2 Multiple Resource Management Lands

The MRM classification allows for the designation of a predominate use as described below, with the understanding that other compatible uses described below may also occur on these lands (e.g., a trail through an area designated as Wildlife Management).

4.3.2.1 Low Density Recreation

Lands with minimal development or infrastructure that support passive public recreational use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing, etc.). Emphasis is on minimal development or infrastructure that might support sightseeing, wildlife viewing, nature study, hiking, biking, horseback riding, primitive camping, and picnicking. Consumptive uses of wildlife (i.e., hunting, fishing, and trapping) are allowed when compatible with the wildlife objectives for a given area and with Federal, Tribal, or state fish and wildlife laws and regulations. Motorized access is allowed on approved trails in designated areas. All motorized access is subject to seasonal or permanent closure based on road conditions, the presence of important species that would be negatively impacted by the presence of motorized vehicles, or other reasons deemed appropriate by USACE.

Facilities may include boat ramps, boat docks, trails, parking areas and vehicle controls, vault toilets, picnic tables, and fire rings. Human-made intrusions (power lines, non-project roads, and water and sewer pipelines) may be permitted under conditions that minimize adverse effects on the natural environment. Vegetation management that does not greatly alter the natural character of the environment is permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. Table 11 below contains a listing of primary and secondary uses on lands classified under MRM – Recreation Low Density.

Table 11. Primary and secondary uses for land classified as Recreation.

MRM – LOW DENSITY RECREATION, 97 ACRES	
PRIMARY USE	SECONDARY USE
Manage land for low density, low impact recreation opportunities. <ul style="list-style-type: none"> ➤ Hunting/fishing ➤ Hiking ➤ Bicycling ➤ Canoeing/kayaking ➤ Horseback riding ➤ Primitive camping ➤ Picnicking ➤ Swimming ➤ Sightseeing and nature observation ➤ Boat ramps ➤ Non-motorized trails ➤ Other similar activities 	Wildlife Management <ul style="list-style-type: none"> ➤ General riparian habitat health ➤ Ecological restoration projects ➤ Nesting habitat ➤ Other similar activities

4.3.2.2 Wildlife Management

This land is designated for stewardship of fish and wildlife resources in conjunction with other land uses. Habitat maintenance or improvements are for a designated species, group of species, and/or a diversity of species. These areas may be administered by other public agencies under a lease, license, permit, or formal agreement. Licenses, permits, and easements are normally not allowed for human-made intrusions such as pumping plants, pipelines, cables, transmission lines, or for non-USACE maintenance or access roads. Exceptions to this policy are allowable where necessary for the public interest or other reasons deemed important by USACE.

Wildlife management land is available for sightseeing, wildlife viewing, nature study, hiking, biking, horseback riding, and primitive camping. Consumptive uses of wildlife (i.e., hunting, fishing, and trapping) are allowed when compatible with the wildlife objectives for a given area, as well as with Federal, Tribal, or state fish and wildlife laws and regulations. Limited motorized access is allowed in designated areas where access would not conflict with the primary purpose of managing for wildlife health. All motorized access is subject to seasonal or permanent closure based on road conditions, the presence of important species that would be impacted from the presence of motorized vehicles, or other reasons deemed appropriate by USACE. Table 12 below contains a listing of primary and secondary uses on lands classified under MRM – Wildlife Management.

Table 12. Primary and secondary uses on lands classified under MRM – Wildlife Management.

MRM – WILDLIFE MANAGEMENT, 3,910 ACRES	
PRIMARY USE	SECONDARY USE
Manage land for stewardship of fish and wildlife resources. <ul style="list-style-type: none"> ➤ General riparian habitat health ➤ Habitat enhancement projects ➤ Ecological restoration projects ➤ Protection of specific habitat areas/components (i.e., denning sites, calving sites, nests, wallows, etc.) ➤ Other similar activities 	Low Density Recreation <ul style="list-style-type: none"> ➤ Hunting/fishing ➤ Hiking ➤ Bicycling ➤ Canoeing/kayaking ➤ Horseback riding ➤ Primitive camping ➤ Picnicking ➤ Sightseeing and nature observation ➤ Designated motorized access trails and roads with seasonal closures ➤ Non-motorized trails ➤ Other recreation activities of a primitive nature

Wildlife management areas licensed to the IDFG consist of extensive acreages containing primarily wetland habitats. Wetlands are particularly productive and sensitive environments. USACE has a stewardship responsibility for these areas that transcends management agreements with the licensee and uses its resources and professional expertise to preserve and protect these areas as productive areas for both consumptive and non-consumptive wildlife.

4.3.2.3 Vegetative Management

Management activities in this classification focus on the stewardship of forest resources and native vegetative cover. All project land is managed to protect and develop vegetative cover in conjunction with other land uses. Vegetative management land is available for sightseeing, wildlife viewing, nature study, hiking, biking, and horseback riding, as well as hunting, fishing, and trapping. Consumptive uses of vegetation (e.g., timber harvest for the purpose of habitat creation and forest health) are acceptable when compatible with the vegetative objectives for a given area. Vegetative management also involves plant communities that are significant to Native American Tribes.

USACE has not designated any AFD lands as MRM – Vegetative Management. Instead, MRM - Wildlife Management was chosen to be the sub-classification for a large portion of the land. The goals of the two classifications are similar and support similar uses and management actions. Vegetative management, however, remains an important aspect of managing wildlife. Wildlife habitat cover types are fundamentally linked to the

distribution and abundance of wildlife species. For this reason, USACE manages wildlife habitat cover types under the AFD Vegetation Management Plan (section 2.8.15).

4.3.2.4 Inactive or Future Recreation Areas

This sub-classification includes land with site characteristics compatible with potential future recreational development, or land that includes existing recreation areas that are temporarily closed. There is no guarantee these areas will be developed or reopened, but in the interim are managed for low-density recreation or wildlife management. Input from stakeholder and working groups determined the land had future recreation potential if funding could be secured and with sufficient public demand. Each proposed recreation development site would be evaluated under NEPA prior to development.

No land at AFD was identified as either Inactive or as a Future Recreation Area.

4.3.3 Project Easement Lands

This category includes all lands for which USACE holds an easement interest, but not fee title. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the project. Easements were acquired for specific purposes and do not convey the same rights or ownership to USACE as other lands. In most cases, USACE has the right to flood these properties on occasion. Planned use and management is in strict accordance with the terms and conditions of the easement estate acquired for the project. USACE has acquired easements on approximately 9,426 acres at or adjacent to Lake Pend Oreille and the Pend Oreille River, including 9,299 acres for flowage purposes, 14 acres for operations purposes, and the remainder for other purposes, not including the 5,041 acres withdrawn from public domain lands.

4.3.3.1 Flowage Easement

USACE retains rights to these lands for project operations. AFD has flowage easements for 9,299 acres. In general, easement lands above and below the summer pool elevation of 2,062.5 feet MSL were acquired by USACE from private landowners to protect USACE in the event of inundation of land. Terms and conditions of the easements are identified in the easement agreements. USACE does not own this land but has reserved interests associated with the operations of AFD.

4.3.3.2 Conservation Easement/Public Domain Lands

USACE retains rights to lands for aesthetic, recreation, and environmental benefits. AFD has withdrawn 5,041 acres of public lands above and below the summer pool of 2,062.5 feet MSL. These lands are withdrawn from appropriation under public land laws for use by USACE for project purposes. The lands otherwise continue to be managed by either BLM or USFS.

4.3.3.3 Operation Easement

Operation easements are lands others have provided a right to USACE for operational purposes. USACE retains rights to these lands necessary for project operations (access, utilities, etc.). AFD has easements of 14 acres for Operations. An example of an “Operation” easement are lands near the dam owned by the railroad but through which USACE has an easement for a utility line.

4.4 DESIGN CRITERIA

Design principles and criteria particularly appropriate to AFD are discussed throughout this section. The following design principles and criteria are extracted from Engineer Manual (EM) 1110-1-400, Recreation Planning and Design Criteria. The EM states, “All project features are designed so that the visual and human-cultural values associated with the project will be protected, preserved, or maintained to the maximum extent possible. Specific ecological considerations include actions to preserve critical habitats of fish and wildlife; accomplish sedimentation and erosion control; maintain water quality; regulate streamflow, runoff, and ground water supplies; and avoidance or mitigation of actions whose effect would be to reduce scarce biota, ecosystems, or basic resources. In the development of individual project features, consideration is given to the needs for architectural design, land treatment, or other resource conservation measures. Emphasis is given to developing measures for realizing the full scenic potential of the project feature as it affects the overall project. This is accomplished by providing for cover reforestation, erosion control, landscape planting, management of vegetation, healing of construction scars, prevention of despoilment, and other related activities for all USACE lands.”

4.4.1 Pertinent Public Laws, Policies and Procedure Publications

All project-related actions and policies must comply with Federal laws and regulations that are listed in Appendix F. In addition, policies and procedures for the planning, design, operation, and maintenance of recreation facilities at USACE civil works projects are provided in engineer manuals, regulations, and pamphlets also listed in Appendix F.

4.4.2 Design Approach

4.4.2.1 Interdisciplinary Approach

The design of all facilities will be a fully coordinated team effort among planning, design, construction, operation, and non-federal elements. This interaction will begin with initial planning concepts and continue throughout the construction and operational phases of the project. Items such as roads, trails, parking areas, launching ramps, campsites, beach developments, and similar facilities should be field-staked, evaluated, and field-adjusted by the design team during the developmental phase. The design team will periodically visit the sites or areas during construction to determine whether field conditions are as anticipated, as well as consult with construction personnel in interpreting the plans and specifications. Site visits will be used to observe and correct any problems not apparent or fully evaluated in the design. A team approach should be used for all aspects of

Federal projects and for the review and approval of plans scheduled for development by non-federal entities. The evaluation process is not finished when construction is completed. The team should observe facilities during project operations to correct inconsistencies between the design and usage, thus gaining experience for future designs.

4.4.2.2 Future Development in Existing Areas

In cases where the modification or renovation of existing facilities is required, special design attention must be given to the following:

- Improving health, safety, and security features for the visitor
- Resource carrying capacity
- Reducing O&M costs

In existing areas, capital costs already invested should not be considered as the primary governing factor for determining types of usage that may be contemplated for an area in the future. Changes may be made when necessary and justified.

4.4.2.3 Barrier-Free Facility Design

All facility designs will provide universal access for visitors where required by Federal law or regulation. Standards are to be applied during the design, construction, and alteration of buildings and facilities.

4.4.2.4 Environmental Protection and Enhancement

Designs minimize the impact of development on the natural and aesthetic qualities of the site. This helps to avoid delays in obtaining certain permits prior to the construction phase. The design team will closely monitor construction and operational activities to ensure compliance with prescribed environmental protection requirements.

4.4.2.5 Carrying Capacity

A quality recreation area is dependent on design and construction that is fully compatible with the physical attributes, resources, and social carrying capacity of the site. Site design will not exceed the carrying capacity of the resource.

4.4.2.6 Access and Circulation

Access and circulation roads into recreation areas play a major role in influencing the total recreation experience. Design and location of roads, parking areas, boat ramps, walks, stairways, and trails will be accomplished in accordance with the philosophy envisioned for public use and participation in recreation activities. Criteria, data, and basic design considerations for access and circulation in recreation areas is subject to EM 1110-2-410, *Design of Recreation Areas and Facilities – Access and Circulation*.

4.4.2.7 Health, Safety, and Security

The health, safety, and security of the visiting public at recreation areas are designed into facilities in the planning stages and are continued throughout the design,

construction, and operation stages. The ERs and EMs in the 385 series establish safety program requirements for all Corps activities. Pertinent provisions of these publications will be applied. All facilities and equipment will comply with applicable Occupational Safety and Health Administration standards, National Fire Protection Association standards, and Consumer Product Safety Commission standards and guides. USACE standards established in EM 1110-1-400, *Recreation Planning and Design Criteria*, applies to facility design in out-granted areas.

4.4.3 Structures

The basic objective in the planning, design, construction, and maintenance of comfort stations, shelters, and other buildings in recreation areas are to provide adequate facilities for the use and support of visitors. Structures will be identifiable, convenient, and economical to construct and maintain. Structures will be attractive but should not distract from the natural character of the area.

4.4.4 Utilities

Utilities must be provided, as necessary, to support recreation facilities and the needs of users. Appropriate alignment and location are very important for aesthetics, costs, and management. Accurate visitation data is extremely important in the design of all utility systems. Designs for new projects will be based on anticipated or projected visitation. Area renovation will be based on actual historical visitation figures. In the design of utility systems, emphasis will be placed on the cost of installing, operating, and maintaining these systems. Systems must meet all Federal, state, and local criteria and standards for health and safety. All utility lines should be placed underground unless cost or other special conditions make such installation prohibitive.

4.4.5 Landscaping

Areas selected for recreation development may possess outstanding natural features (i.e., earth, rock, water, or plant materials). It is essential for the design team to ensure these attractions are used to optimum advantage during site development. Physical properties of the site will be inventoried and features most conducive to the proposed development determined. Design should utilize these features to the maximum extent possible. Whenever possible, existing plant materials will be incorporated into the proposed design. In some cases, thinning of vegetation may be desirable (0-50-percent shade; very dense shade is undesirable for recreation sites). If additional plants are required, they will be native species indigenous to the site or ornamental species that are growth zone compatible. Species should be low maintenance varieties and hardy for the area. Watercourses or natural springs will be staked or fenced to prevent damage from construction activities.

4.4.6 Support Items

The quality of camping, picnicking, or other recreational experiences is often contingent on the quality, type, and design of available support facilities. A challenge for the designer and manager is to provide aesthetically harmonious, functional facilities that

are durable, resistant to vandals, and economical to install and maintain. Specific design criteria for campsites, picnic areas, launch ramps, swimming areas, fishing areas, and hunting areas are found in EM 1110-1-400, *Recreation Planning and Design Criteria*.



Figure 11. Albeni Cove Recreation Area at sunset.

5 RESOURCE PLAN

As described in Chapter 4, all USACE lands along Lake Pend Oreille and the Pend Oreille River are congressionally allocated as Operations. Within the Operations allocation, the properties are classified (zoned) for different functions or uses such as Operations, High Density Recreation, Multiple Resource Management – Low Density Recreation, and Multiple Resource Management – Wildlife Management Area. Environmentally Sensitive Areas are a sub-classification that overlaps into at least one of the main classifications; therefore, these acres are not included in the total acreage of an area. Acreages below 2,062.5 feet MSL elevation are flooded when the reservoir is at high pool in the summer months but are exposed in the low water (winter) months. Chapter 3 described the resource objectives for the stewardship of the overall AFD Project resources, and for specific land classifications designated to each management area. This chapter is organized by the 23 individual management areas and will describe each area in terms of its designated land classification, anticipated public use, area development needs, and any identified special considerations. Project management plans and associated development needs deal in concepts, not in details of design or administration.

Maintaining facilities, improving some facilities, and protecting natural areas and natural resources have several small-scale actions that would be proposed future development under the Master Plan. In addition to these small-scale actions and development needs identified for each management area, USACE also conducts the following routine O&M actions:

- Repair and maintenance of buildings and utilities
 - Reroofing
 - Repainting
 - Electrical replacement and/or upgrades
 - Repair/replacement/upgrades of plumbing
 - Install/repair/replacement/upgrade of HVAC systems
 - Install/repair/replacement/upgrade of propane and other utilities.
 - Install/repair/replacement/upgrade sewage disposal systems (dump and lift stations, leach field and septic systems, and holding tanks).
 - Install/repair/replacement/upgrade of potable water systems to include wells and service lines.
 - Maintenance and repair of traffic counters (buried magnetic loop).
- Repaving or improving road surfaces
- Recreation Area Improvements
 - Replace portable offices with permanent structures
 - Replace restrooms with ADA-compliant restrooms and/or shower facilities
 - Electrical, water, and sewer service upgrades to campsites
 - Vegetation plantings
 - Shoreline stabilization projects

- Install new paved trails and walkways
- Install signage
- Changing fence types on Park boundaries
- Install playground equipment
- Install/repair/replace/upgrade irrigation systems to include pumps and distribution lines
- Lighting along trails
- Install/replace/upgrade picnic tables and table pads
- Install/replace/maintain docks, boat ramps, tie downs, fishing piers, and pilings
- Add/modify campsites to accommodate more users or volunteers
- Installation of one-way traffic control spike-barrier gates at recreation area entrances.
- Installation of electronic fee collection stations.

In addition to the above O&M actions, an overarching development need for all management areas is to reduce the presence of invasive species in both aquatic and terrestrial habitats. Most management areas have both terrestrial and aquatic invasive plant species that require treatment to control their spread and vegetation monitoring to determine the success of the control efforts. As noted in section 2.8.15.1.1 (Management Plans), the AFD Vegetation Management Plan is nearly 20 years old and needs updating to address the current vegetative conditions on USACE lands. Efforts to treat and control aquatic invasive plants such as watermilfoil and flowering rush on USACE lands have occurred for over two decades with some success (Appendix B). However, the same effort to control reed canary grass has not occurred and the invasive weed is now a dominant vegetation cover in most wetland habitats on USACE lands. A pest management plan that is consistent with an updated vegetation management plan is needed.

5.1 VISTA RECREATION AREA

Classification: The Vista Recreation Area has three primary land classifications: Operations, Recreation, and Multiple Resource Management – Low Density Recreation, and the sub-classification Environmentally Sensitive Area.

Management Agency: USACE

Location and Acreage: The 40.5-acre Vista Recreation Area is located 2 miles east of Newport, Washington on U.S. Highway 2, and is along the northern side of the Pend Oreille River. The Vista Recreation Area provides a scenic overview of the powerhouse and dam. The following is a summary of acreages under the different land classifications:

- 17.4 acres Operations
- 4.8 acres Recreation
- 18.3 acres Multiple Resource Management – Low Density Recreation

- 0.9 acres Environmentally Sensitive Area.

Description and Use: The Vista Recreation Area provides a scenic overview of the powerhouse, dam, and the Pend Oreille River. Facilities in the Vista site include paved roads and parking lots, two picnic areas, several scenic viewing points, visitor center with restrooms (Figure 12), a paved trail from the Visitor Center to the powerhouse, a boat ramp and dock for project operations, the powerhouse and appurtenant structures, and the Natural Resource Maintenance Shop (Figure 13). The area is open to the public year-round and is a popular location for tours, picnicking and scenic viewing. Visitation averaged over a 5-year period (2018-2023) is 31,571 people per year.

Development Needs: The following development needs are identified for the Vista Recreation Area:

- Renovate irrigation system to extend and replace with pop-up heads.
- Design and install interpretive signage.
- Landscaping work including turf renovation and plantings.
- Install lighting on pathway from Visitor Center to powerhouse.
- Update interpretive exhibits, signs and displays in the powerhouse and Visitor Center.
- Playground installation.
- Install a volunteer park host site.
- Crack seal and seal coat parking areas, access roads and paved trails.
- Construct building for storage of equipment and materials in the Natural Resource Maintenance Shop.
- Replace Maintenance Shop with updated facility.
- Trail installation to facilitate Pend Oreille River Passage Trail, connecting Oldtown with Sandpoint.

Special Considerations: The Natural Resource Storage Area is where material and equipment is stored. This area also serves as a disposal area for debris raked from the forebay of the dam as well as vegetation from other areas of the project. This material is sorted, and the natural debris is burned in an Air Curtain Burner. USACE also permits an invasive species check station operated by the Idaho State Department of Agriculture.



Figure 12. Visitor Center at the Vista Recreation Area.



Figure 13. Map of the Vista Recreation Area.

5.2 ALBENI COVE RECREATION AREA

Classification: Albeni Cove Recreation Area is classified as Recreation and includes an Environmentally Sensitive area.

Management Agency: USACE

Location and Acreage: The 39.2-acre Albeni Cove Recreation Area is located on the south bank of the Pend Oreille River across from the Vista Recreation Area at AFD. It is located southeast of Hwy 41 on 4th Street (Figure 14). The following is a summary of acreages under the different land classifications:

- 29.8 acres Recreation (uplands)
- 9.4 acres Environmentally Sensitive Area/below 2,062.5 feet MSL elevation.

Description and Use: Public use facilities include 13 non-hookup campsites, one hookup site with power, five park attendant sites, a restroom, a picnic area, one boat ramp, one swim area, one park office, paved roads, and paved or graveled parking areas. A bridge spanning the cove was installed in 1991 and rehabbed in 2023. Facilities removed include a caretaker's cabin in 1990 and four vault toilets in 1997. Bank stabilization work occurred at the recreation area in 2009. The area was closed during the summer of 2021 to facilitate bank stabilization at Strong's Island. During the closure, staff rehabbed most of the public campsites and constructed a volunteer village. The area is open from mid-May to mid-September, with walk-in use during the winter months. Visitation averaged over a 5-year period (2019-2024) is 12,362 people per year.

Development Needs: The following development needs are identified for the Albeni Cove Recreation Area:

- Redesign and rehabilitate remaining campsites.
- Replace restroom.
- Repair trails leading to tent-only sites.
- Maintain pedestrian bridge.
- Repair and repave roadways.
- Add trails and hard-surface trails for accessibility.
- Pave boat overflow parking area.
- Provide shade in the Volunteer Village.
- Construct a playground.
- Renovate picnic area for accessibility.
- Construct interpretive amphitheater.
- Stabilize beach from further erosion.
- Install irrigation in Volunteer Village.
- Install potable water spigots for filling camping trailers.

Special Considerations: Timber theft and trash dumping has been a challenge during the off-season. Staff have installed extra gates and increased patrols to dissuade nuisance behavior.



Figure 14. Map of Albeni Cove Recreation Area.

5.3 NORTSHORE STRIPS WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area with Environmentally Sensitive Areas.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The North Shore Strips WMA is a 22.4-acre undeveloped parcel that lies between the Burlington Northern Railroad right-of-way and the north shore of the Pend Oreille River. Within the boundary of the WMA are 12.7 acres designated as Environmentally Sensitive Area. The management unit begins at the dam area and ends 3 miles upstream. The strips are accessible by foot or boat.

Description and Use: The Northshore Strips WMA is a natural area (Figure 15) that is managed by IDFG for the benefit of fish and wildlife resources and is open to the recreating public, mostly via boat. The WMA is long and narrow, with slopes at the west end that drop from the railroad to the water's edge (Figure 16). As the unit progress east, the slopes graduate into flat, undulating areas. Vegetation is typically deciduous shrub-upland and riparian to include hawthorn, serviceberry, and snowberry. A few small areas of cattails occur, as well as pockets of forested areas with species including Douglas fir, grand fir, and ponderosa pine. A variety of wildlife including deer and beaver use the area. Shorebirds including herons and sandpipers frequent the wet areas. Songbirds also use the shrubs for foraging and nesting sites.

Development Needs: Bank stabilization is the one development need identified.

Special Considerations: None



Figure 15. View of the Northshore Strips WMA from the Pend Oreille River.

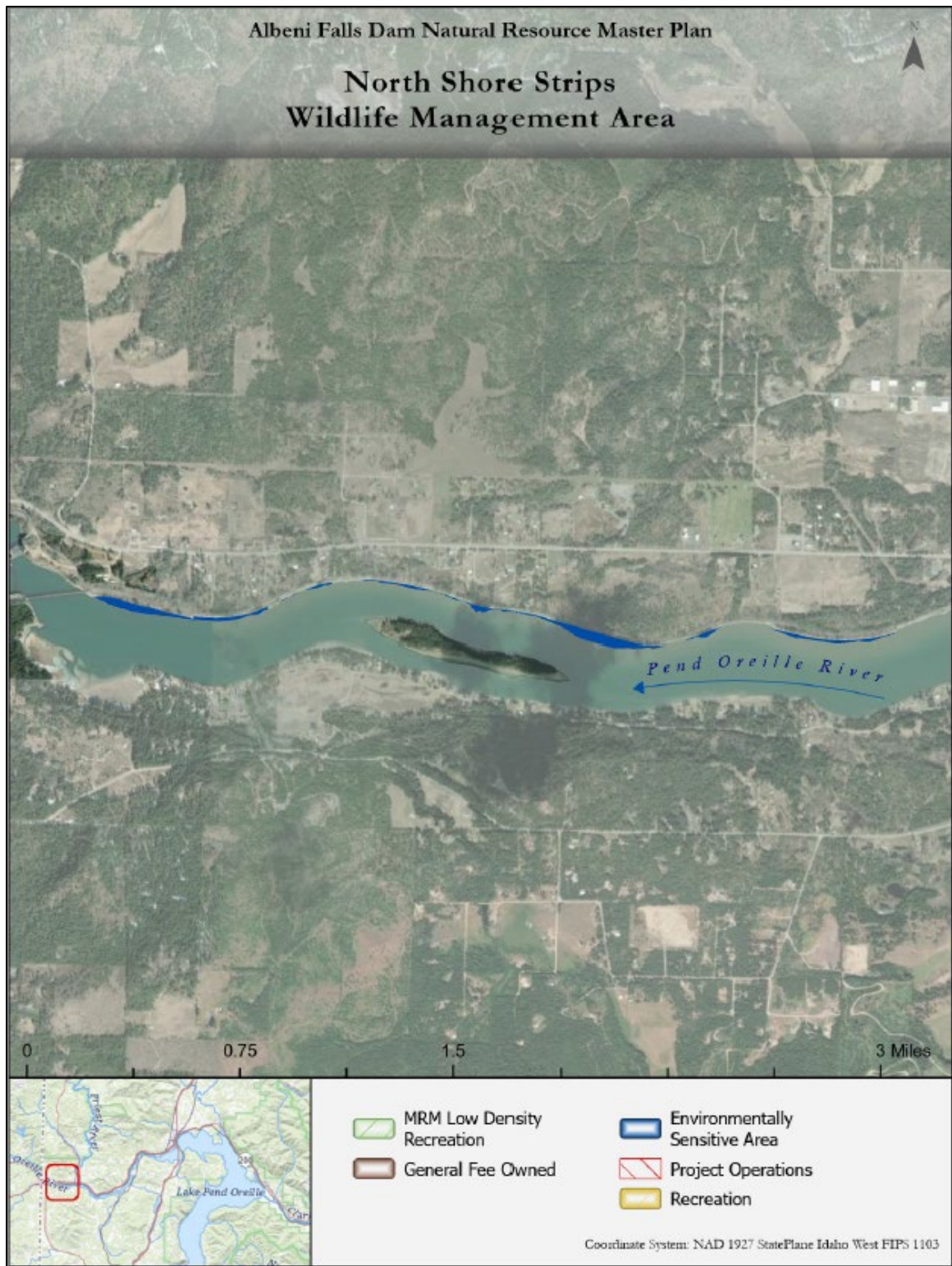


Figure 16. Map of North Shore Strips WMA.

5.4 STRONG'S ISLAND WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area with Environmentally Sensitive Areas.

Management Agency: IDFG, by license, within the Pend Oreille WMA (included as part of the North Strips WMA).

Location and Acreage: Strong's Island WMA is a 31.1-acre mid-channel island located 2 miles upstream from AFD in the Pend Oreille River (Figure 17). Within the WMA are the following sub-classification acreages:

- 12.1 acres designated as Environmentally Sensitive Areas
- 13.1 acres below 2,062.5 feet MSL elevation.

Description and Use: Prior to 1982, the island supported limited recreational development as a picnic and primitive camping area for boaters. In 1982, the facilities were removed, and the island is now managed for wildlife considerations. The island is long and narrow with a wide variety of vegetative cover. At the western and downstream end of the island, a meadow is bordered with low shrubs, isolated conifers, and fruit trees that remain from a former orchard. East of the meadow, a mixed forested area composed primarily of ponderosa pine extends eastward in varying densities. The ponderosa pine graduates into a fir/red cedar type and birch/red cedar type. A small pocket of wetland vegetation occurs on the north side of the island in the peat/muck soil area.

As nearby lands along the riverbank are increasingly developed for residential use, the habitat provided by Strong's Island becomes more important. The island provides a resting place for white-tailed deer, supports a resident population of ruffed grouse, and provides resting and rearing habitat for Canada geese. Varieties of birds associated with evergreen forests also use the area for nesting and foraging. Small mammals occur on the island, although larger mammals, particularly carnivores, are limited due to accessibility.

Erosion from wave action and sloughing continues to be a problem on the entirety of the island. Erosion on the downstream tip (western end) of the island was adversely affecting an archaeological site and in 2020, USACE completed a 1,000-foot bank stabilization project along the island's western shoreline to stop the erosion in this area and provide some protection for the archaeological site. USACE has also coordinated with Bonner County Parks and Recreation to install County No Wake signs on the island.

Development Needs: Bank stabilization of remaining eroding shoreline on the island is the one development need identified as well as routine maintenance, seeding and planting on stabilized areas.

Special Considerations: No special considerations are identified for the Strong's Island WMA.



Figure 17. Map of Strong's Island (part of North Shore Strips WMA).

5.5 PRIEST RIVER RECREATION AREA

Classification: Priest River Recreation Area is classified as Recreation and is managed as a public campground and park.

Management Agency: USACE

Location and Acreage: The 22.7-acre Priest River Recreation Area is located east of the Town of Priest River, on the east bank of the confluence of the Priest River and the Pend Oreille River. Within the boundary of the recreation area are 2.8 acres designated as Environmentally Sensitive Area.

Description and Use: The high-intensity recreation area, locally called "the Mudhole" (Figure 18), consists of the following public use facilities: 20 campsites with no hookups, a small group camping area, three park attendant sites with full hookups, one swim area, one boat ramp with courtesy dock, one mooring dock, one amphitheater, a sports field, a playground area, one reservable shelter, one shower-house restroom, one restroom with changing areas, one dump station, one park office, paved roads and parking lots (Figure 19). A non-motorized boat launch was installed in 2021 in partnership with the Pend Oreille River Paddling Association. The entire recreation area was repaved in 2024. The area is open for drive-in use from mid-May to the end of September, with walk-in use during winter months. Visitation averaged over a 5-year period is 26,322 people per year.



Figure 18. The swimming area called “the Mudhole” at the Priest River Recreation area.

Vegetation consists of coniferous forest including ponderosa pine, lodgepole pine, grand fir, western white pine, Douglas fir, and western red cedar. In addition, a portion of the recreation area is in lawn. The low-intensity recreation area includes wetland species such as cattails with small pockets of upland shrubs and scattered pockets of coniferous trees.

Osprey, deer, raven, gulls, and migratory songbirds are commonly seen in the recreation area. Black bear, moose, and white-tailed deer occasionally visit. Waterfowl and wading birds use the wetlands within the wildlife area for breeding and loafing. Fish species caught from the shores of the recreation area include kokanee, whitefish, smallmouth bass, walleye, and various trout species.

Development Needs: The following development needs are identified for the Priest River Recreation Area:

- Replace playground.
- Renovate sports field.
- Add and hard-surface trails for accessibility.
- Renovate picnic area for accessibility.
- Replace pumphouse.
- Replace restrooms.
- Pave boat overflow parking area.

- Install concrete sidewalks to and around the beach restroom to support accessibility and prevent turf damage.
- Install hookups for campsites (water/power/sewer).
- Install potable water spigots for filling camping trailers.
- Replace floating courtesy dock with a fixed pier dock.
- Renovate irrigation system.

Special Considerations: USACE partners with the Pend Oreille River Paddling Association and permits storage of rowing skull racks and hosts the association's annual Sprints Event. USACE also hosts the Priest River Youth Sports for spring and fall soccer seasons. It is noted that water quality can be severely degraded in the swim area during the summer months due to warm temperatures on the Priest River and low inflows out of Priest Lake.



Figure 19. Map of Priest River Recreation Area.

5.6 PRIEST RIVER WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management with Environmentally Sensitive Areas.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 114.7-acre Priest River WMA is located along the northern bank of the Pend Oreille River and east of the Priest River Recreation Area (Figure 20). It is bound to the north by the Burlington Northern Railroad. Within the WMA are the following sub-classifications acreages:

- 82.7 acres are designated as Environmentally Sensitive Area
- 86.0 acres below 2,062.5 feet MSL elevation.

Description and Use: Vegetation consists of coniferous forest including ponderosa pine, lodgepole pine, grand fir, western white pine, Douglas fir, and western red cedar. The wetland areas include species such as reed canary grass and cattails with small pockets of upland shrubs and scattered pockets of coniferous trees (Figure 21).

Osprey, deer, raven, gulls, and migratory songbirds are commonly seen with an occasional visit from black bear, moose, and white-tailed deer. Waterfowl and wading birds use the wetlands for breeding and loafing.

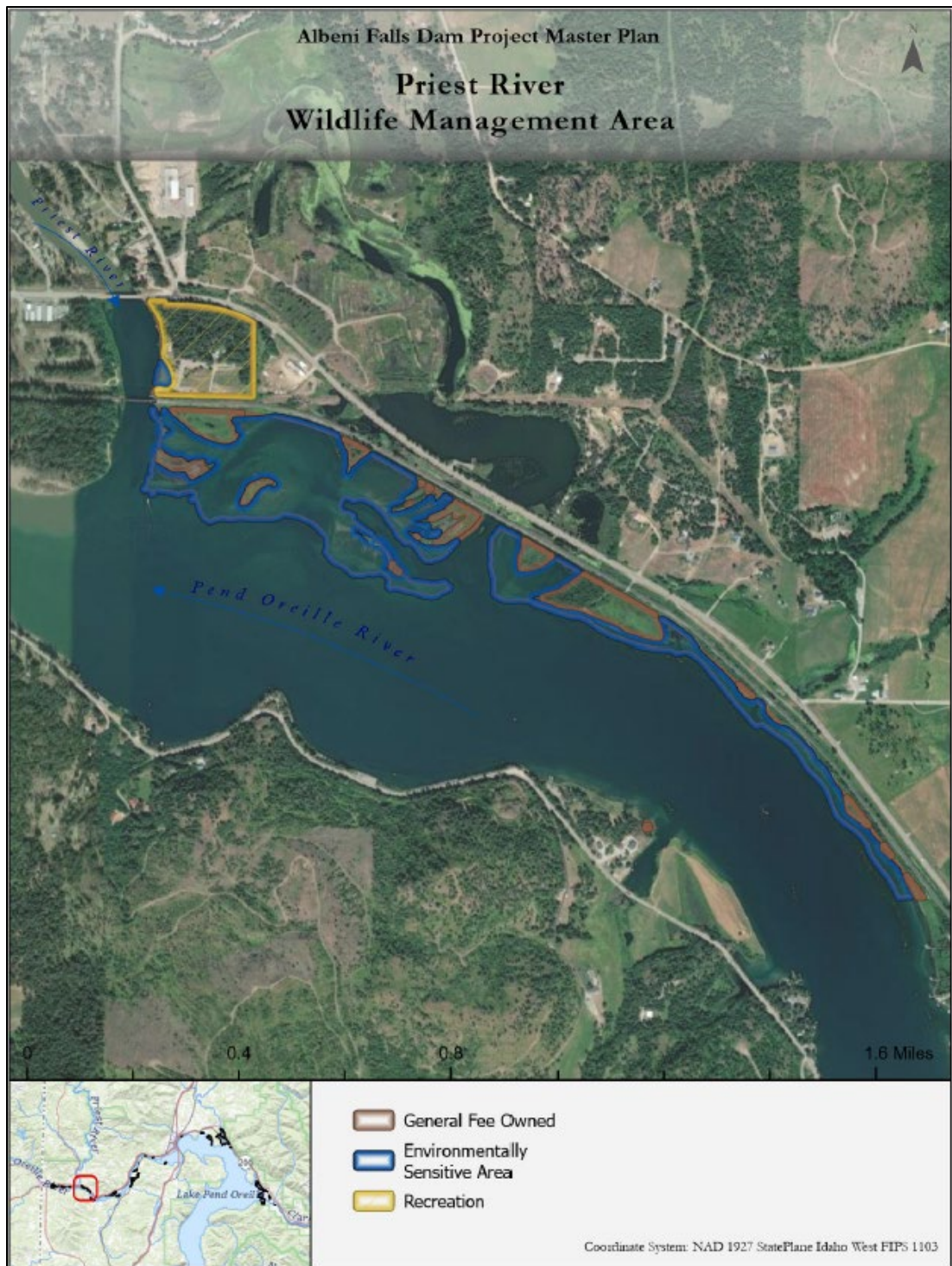


Figure 20. Map of the Priest River WMA.

Due to erosion from wave action and seasonal sloughing, the shoreline has been stabilized with riprap and plantings in phases. In 2006 (Phase I), approximately 600 linear feet of shoreline was stabilized with riprap and plantings. In 2007 (Phase II), 750 linear feet of steeper sloped banking was stabilized with riprap, and in 2015 (Phase III), approximately 3,700 linear feet were stabilized with riprap with a willow lift one foot above the ordinary high-water line (2,062.5 feet MLS). All three bank stabilization projects continue to show good structural stability. Starting from the west, Phase I is a rock shoreline that shows no vegetation regrowth to this date. Phase II appears to have poor vegetative recruitment at the start of the bank protection work (west side), but then the vegetative cover increases over the eastern portion of the project as methods and efforts to focus on creating a vegetation line along the bank improved and increased. Phase II has good potential for reseeding efforts or shrubby species augmentation. Phase III is responding well to the willow planting and grass seeding efforts implemented during that project and shows no need for replanting.



Figure 21. View of the Pend Oreille River from the Priest River WMA.

Development Needs: Bank stabilization of eroding shorelines is the one development need identified.

Special Considerations: There are no specific special considerations identified for the Priest River Wildlife Management Area.

5.7 C-322 WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 0.4-acre parcel is located on the south bank of the Pend Oreille River, 7 miles east of AFD and 2 miles east of Priest River off Dufort Road. This area is included as part of the Priest River WMA (section 5.6).

Description and Use: C-322 refers to the parcel number for this tract taken from the real estate maps. Most of the area is composed of northeast facing rock outcrop with a small, flat parcel of wetland between the rock outcrop and the water's edge. Vegetation consists of a cattail fringe near the water line and upland vegetation on the rock outcrops. Two large ponderosa pines serve as perch trees, with smaller ponderosa mixed with upland brush species. The parcel on its own is too small to support a diversity of wildlife or fish but has resource value as it is adjacent to an undeveloped area and fronts the Pend Oreille River (Figure 22). There is evidence of small bird and raptor use of the perch trees and the surrounding brush.

Development Needs: No development needs are identified at present.

Special Considerations: There are no specific special considerations identified for the C-322 parcel.



Figure 22. Map of C-322 parcel (part of Priest River WMA).

5.8 CAREY CREEK WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 60.6-acre Carey Creek WMA is located on the south bank of the Pend Oreille River, 8 miles east of AFD and 3 miles east of Priest River off Dufort Road (Figure 23). The WMA is accessible by foot or by boat. Within the WMA are the following acreages:

- 44.4 acres Environmentally Sensitive Areas
- 46.7 acres below 2,062.5 feet MSL elevation.

Description and Use: Carey Creek WMA is a mosaic of land and water, with marshy islands on the west end and a small portion of upland on the east. The creek runs through the middle of the unit, dividing the marshy areas from the upland portions. At low water, mud flats are evident throughout the unit. A rock outcrop drops down from the edge of the county road on the west end into the marshy areas.

The parcel has a variety of habitat types, including a coniferous/deciduous tree mix on the rock outcrop with a shrub understory, and upland shrubs in the east portion. The marshy areas consist of emergent vegetation including cattails and invasive reed canary grass. A large portion of the shoreline is lined with noxious weeds. Minimal shrub cover with species such as willows and dogwood exist on the parcel.

A bank stabilization project covering approximately 2,000 linear feet was completed at the Carey Creek WMA between 2018 and 2019. A willow lift was installed about 1-2 feet above the ordinary high-water line (2,062.5 feet MSL) on the waterward side and a riparian grass seed mix applied to the disturbed area. However, the fill used at the site was infested with noxious weeds and as a consequence, a large portion of the shoreline is now covered with the weeds.

Wetland and upland bird species use the area for foraging and nesting. Eagles have been observed sitting in the neighboring coniferous trees and on pilings in the marshy areas.

Development Needs: Bank stabilization of the eroding shoreline, addressing invasive and noxious weeds, and replanting the treated site are the development needs identified.

Special Considerations: Continue to explore partnering opportunities for historic properties and archaeological and tribal resources protection and habitat restoration with adjacent landowner (Kalispel Indian Community of the Kalispel Reservation).

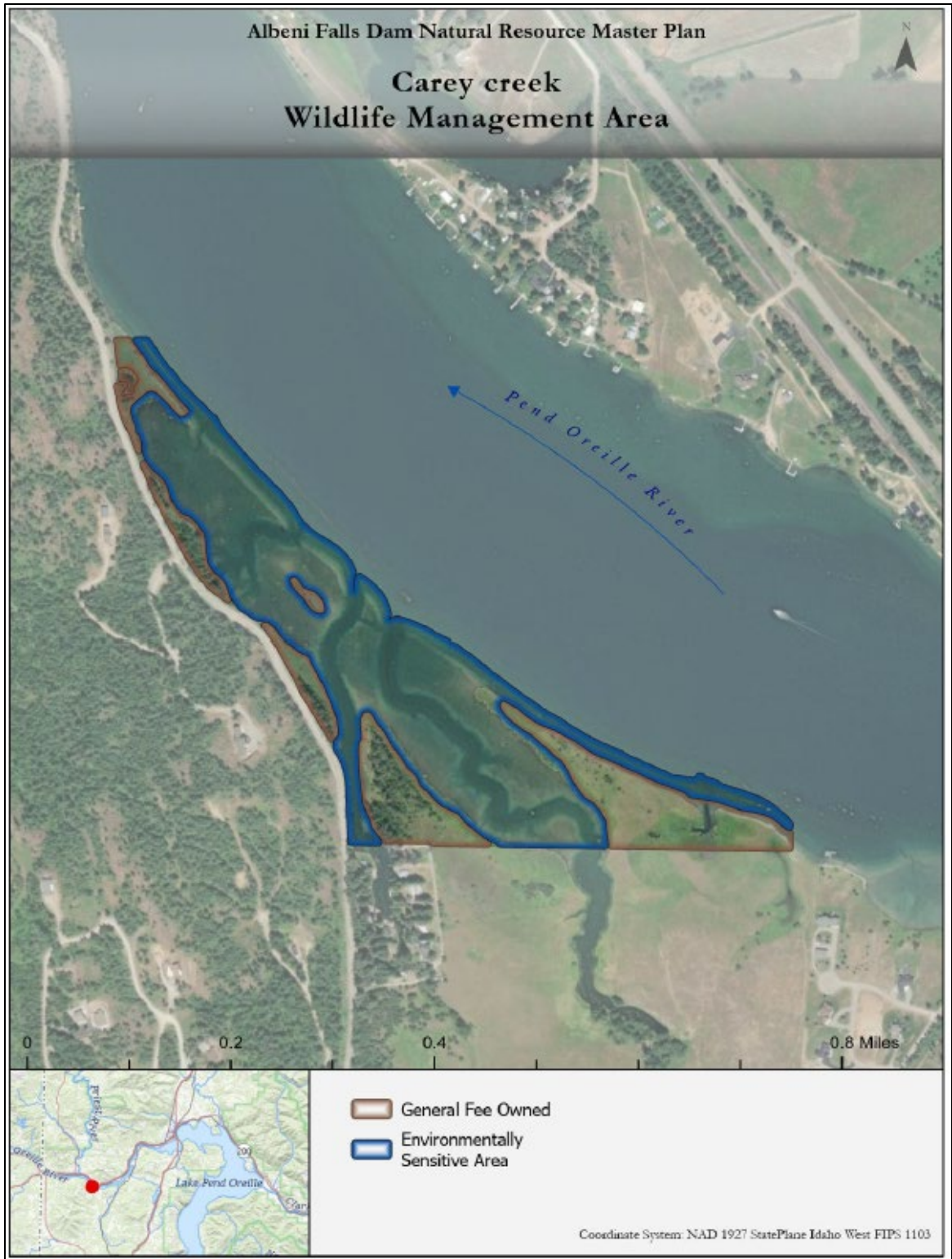


Figure 23. Map of Carey Creek WMA.

5.9 RILEY CREEK RECREATION AREA

Classification: Riley Creek Recreation Area is classified as Recreation and includes an Environmentally Sensitive area.

Management Agency: USACE

Location and Acreage: The 48.2-acre Riley Creek Recreation Area is located on the northern shore of the Pend Oreille River near Laclede, Idaho, on a peninsula of land bound by the Pend Oreille River on the south and the Riley Creek Slough to the northwest (Figure 24). Within the recreation area, 1.3 acres are considered an Environmentally Sensitive Area.

Description and Use: Riley Creek Recreation Area consists of the following public use facilities: 67 campsites with hookups (water and power), five park attendant sites with full hookups, one swim area, one two-lane boat ramp with courtesy dock, a boat basin, two fishing piers, one amphitheater, a playground area, two reservable shelters, four restrooms (three with showers), bike-pedestrian trail, one dump station, one park office, paved roads and parking lots. The recreation area was modernized in the late 2000s, and some bank stabilization work was completed in 2018. The Riley Creek Recreation Area consistently ranks as one of the highest used USACE facilities in the nation. The area is open to vehicular travel from mid-May to mid-September, with walk-in use during winter months. Visitation averaged over a 5-year period (2018-2023) is 52,204 people per year.

Riley Creek Recreation Area has a low profile, with minor elevations undulating throughout. It supports stands of western red cedar, western white pine, grand fir, Douglas fir, ponderosa pine and lodgepole pine. The recreation area provides habitat for waterfowl, small mammals, ospreys, bald eagles, songbirds, and provides winter habitat for larger wildlife such as deer, moose, and bear.

Development Needs: The following development needs are identified for the Riley Creek Recreation Area:

- Repair of tree-heaved roads and trails.
- Replace playground equipment.
- Addition of shade shelters at the beach.
- Replacement of dump station and drain field.
- Replace restroom buildings.
- Dredging of the boat basin during low water to ensure safe navigation.
- Installation of new park benches.
- Addition of interpretive signage highlighting the historical and ever-present tribal significance of the area.

Special Considerations: The dump station and associated leach field is undersized, which often results in overloading during busy weekends. A wholesale replacement is needed as the leach field cannot be expanded due to proximity to the river.



Figure 24. Map of Riley Creek Recreation Area.

5.10 RILEY CREEK WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location/Acreage: The 150.3-acre Riley Creek WMA is located on the north shore of the Pend Oreille River near Laclede, Idaho (Figure 25). The parcel includes portions of the Riley Creek Slough and shoreline north of the recreation area (Figure 26). Within the WMA are the following sub-classification acreages:

- 118.9 acres Environmentally Sensitive Area
- 117.1 acres below 6,062 feet MSL elevation.



Figure 25. Photograph showing the Riley Creek WMA.

Description and Use: The Riley Creek WMA has a mostly flat topography with minor elevation undulations throughout. It supports western red cedar, western white pine, grand fir, Douglas fir, ponderosa pine, and lodgepole pine. The wetlands areas include species such as reed canary grass and cattails, with pockets of shrub-scrub wetland and conifers. This unit provides habitat suitable for waterfowl, white-tailed deer, small mammals, osprey, bald eagles, bear, moose, and songbirds.

Development Needs: No development needs are identified at present.

Special Considerations: Special considerations for the Riley Creek WMA involve boundary demarcation and rectification, and implementation of bank stabilization actions. Several encroachments exist on the southeast portion of the area.



Figure 26. Map of Riley Creek WMA.

5.11 HOODOO CREEK WILDLIFE MANAGEMENT AREA

Classification: Hoodoo Creek WMA is classified as Multiple Resource Management – Wildlife Management.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location/Acreage: The 82.0-acre Hoodoo Creek WMA is located on the south bank of the Pend Oreille River, directly across from Laclede, Idaho, and the Riley Creek Recreation Area (Figure 27). The site may be accessed by turning north off Dufort Road and driving approximately 1/2 mile. The access road formerly served as an approach to the Seneacquoteen ferry that ran from the south side of the river to Laclede. Within the WMA are the following sub-classifications:

- 52.1 acres Environmentally Sensitive
- 53.0 acres below 2,062.5 feet MSL elevation.

Description and Use: Topography of the area is generally flat, with wetlands progressing gradually upslope to the dryer uplands. The area is a mosaic of land and water, with marshy islands and peninsulas protruding north into the river, and uplands on the southern portions of the Hoodoo WMA. The area's wetlands are a complex mosaic of emergent and sub-emergent types, merging into undisturbed riparian forest. Emergent cattail and reed canary grass marshes predominate in the wetter areas. The riparian forest consists of aspen groves interspersed with hawthorn-snowberry shrub lands and wet meadows. Evergreen trees are scattered throughout the upland area.

A bank stabilization project was completed in 2013. USACE used barge placement of rock spalls and riprap along the affected shoreline and then topsoil was strategically placed on the backside of the rock top mound above the high-pool elevation line. Native herbaceous and riparian shrub species such as native grasses, willow (*Salix scouleriana*), red-osier dogwood (*Cornus sericea*), rose (*Rosa nutkana*), and Douglas spirea (*Spirea douglasii*) were planted into the placed soil.

The diverse wetland and riparian communities are used extensively by breeding and wintering waterfowl, foraging water birds, and white-tailed deer. Numerous songbirds and small mammals use the unit for nesting and denning, as well as foraging.

Development Needs: The following development need was identified for the Hoodoo Creek WMA:

- Explore opportunities to improve boating access to the Pend Oreille River by improving road, parking lot, and installing a boat ramp.
- Addition of interpretive signage highlighting the historical and ever-present tribal significance of the area.

Special Considerations: At present, the only special considerations involve boundary demarcation and bank stabilization actions.



Figure 27. Map of Hoodoo Creek WMA.

5.12 MORTON SLOUGH WILDLIFE MANAGEMENT AREA

Classification: Morton Slough WMA has two land classifications as follows:

- Multiple Resource Management – Low Density Recreation
- Multiple Resource Management – Wildlife Management, which includes Environmentally Sensitive Areas.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location/Acreage: The 401.9-acre Morton Slough WMA is located on the southern shore of the Pend Oreille River approximately 12 miles southwest of Sandpoint. The site is accessed by Lakeshore Drive from the east or from Dufort Road east of Priest River, Idaho, or west from Highway 95. Acreages are as follows:

- 9.0 acres Multiple Resource Management – Low Density Recreation
- 392.9 acres Multiple Resource Management – Wildlife Management
- 303.8 acres Environmentally Sensitive
- 349.3 acres below 2,062.5 feet MSL elevation.

Description and Use: The majority of the Morton Slough WMA is low lying and flat and the public can access the WMA via two access areas (Figure 28). The northern access area is primitive and only provides access to an enclosed slough. Water quality is severely degraded in the summer months and Eurasian watermilfoil is prevalent in the entirety of the slough. Non-motorized activities such as canoeing and kayaking are popular at the site.

The southern Morton Slough Access Area provides access to the Pend Oreille River and includes a boat ramp, floating boat dock, paved parking lot, and pit toilet, all of which are maintained by IDFG (Figure 29). In 2011, IDFG conducted improvements at the boat launch area, which brought the boat launch and parking area into ADA compliance. Overall improvements included paving the parking lot, providing ADA designated parking, accessible toilet, and boarding/fishing dock. In 2023, IDFG expanded the parking lot due to increased visitation (Figure 30)

The south peninsula rises slowly from the water's edge to a low knoll at its eastern boundary. The edge at the southwestern boundary falls abruptly to an eroded shoreline. Most of the peninsula shoreline consists of a gently sloping gradient to the beach. The northwest section contains a pond with a gently rising, grassy shoreline. The peninsula area is primarily grassland with a zone of upland shrubs merging into mixed, open woods on higher ground. Small cluster of evergreens occur in the grassy areas. Emergent wetland vegetation is present on the shoreline of the river and consists primarily of cattails and the invasive reed canary grass. The northern pond has small areas of cattails, with the shoreline dominated by reed canary grass (Figure 31). The extensive wetlands and shallow, protected waters are an important habitat for a variety of waterfowl and mammals. Osprey and bald eagles feed in the north pond area.

Canada geese nest on structures erected by the IDFG. The shallow water areas support a spiny ray fishery.

Development Needs: The following development need was identified for the Morton Slough WMA:

- Continued maintenance of the parking lots.

Special Considerations: Special considerations involve boundary rectification actions as well as actions to resolve recreational impacts from the public accessing the river.

Parking at the access site is limited and visitors are often observed recreating on the shoreline, creating social trails, and disposing of trash on the ground. In addition, several encroachments exist around the shoreline of the slough due to private development.

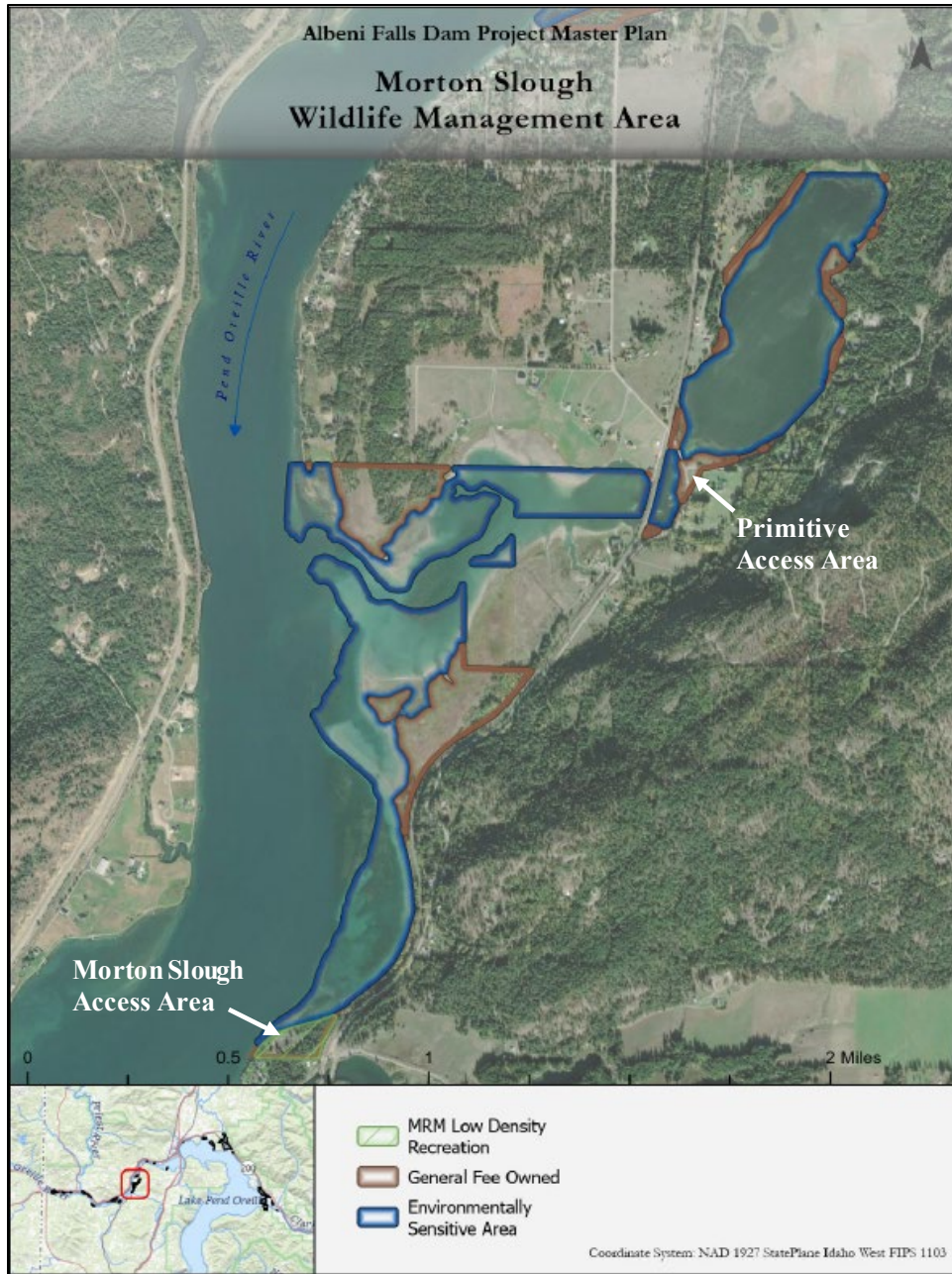


Figure 28. Map of Morton Slough WMA.



Figure 29. Map of Morton Slough Access Area, Morton Slough WMA.



Figure 30. Aerial photograph showing the 2023 newly expanded parking area at the Morton Slough Access area.



Figure 31. Photograph showing the Morton Slough WMA.

5.13 MALLARD BAY WILDLIFE MANAGEMENT AREA

Classification: Mallard Bay is classified as a Multiple Resource Management – Wildlife Management Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 47.9-acre Mallard Bay WMA is located on the southern shore of the river approximately 12 miles southwest of Sandpoint, Idaho, south and west of the change in Lakeshore Drive from gravel to asphalt (Figure 32). Within the WMA are the following sub-classification acreages:

- 39.1 acres Environmentally Sensitive Area
- 44.0 acres below 2,062.5 feet MSL elevation.

Description and Use: Prior to 1996, Mallard Bay WMA was 49.8 acres, and then in 1996 as part of a land exchange about 2 acres were returned to private ownership. In return, USACE received additional acreage (6.2 acres), adjacent to other USACE properties (Ponder Point Management Unit of Oden Bay WMA).

The Mallard Bay WMA is long and narrow, with an adjacent subdivision on the west end. An outgrant was issued for installation of a fixed-pier dock in the 2000s. The outgrant expired in 2022 and was not renewed. USACE will determine the future course of action for maintaining or removing the dock.

Mallard Bay forms the western edge of an embayment that provides shelter from winter winds for waterfowl. The uplands provide valuable habitat for a variety of passerines and songbirds. Game animals include white-tailed deer, pheasant, and waterfowl. Shallow water areas support a significant spiny ray fishery.

Development Needs:

- Improve access to public dock on the property, which would include shoreline protection, improvement of the walkway and trail and addition of a small parking lot.

Special Considerations: Special considerations involve boundary demarcation and rectification, and implementation of bank stabilization actions. One comment from the public during the public scoping period (June-July 2024) involved a request to resolve the dock encroachment at Mallard Bay.



Figure 32. Map of Mallard Bay WMA.

5.14 MUSKRAT LAKE WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area with the sub-designation of Environmentally Sensitive Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 2.0-acre Muskrat Lake WMA is located approximately 5 miles west of Sandpoint, Idaho, on the southern shore of the Pend Oreille River. The entire site is considered an Environmentally Sensitive area. The WMA is bordered on the landward side by a railroad embankment and is accessible by boat or foot (Figure 33).

Description and Use: Muskrat Lake WMA is relatively level, consisting of water and emergent marshes gradually rising into drier uplands (Figure 34). Mudflats are evident when water levels have receded. The east end of the site rises abruptly at the toe to the top of the railroad embankment. The wetland areas consist of emergent vegetation including cattail and invasive reed canary grass. Uplands are vegetated with lodgepole pine woods and shrubs. The site is valuable as a fall resting and foraging site for waterfowl. The riparian habitat supports a variety of birds and small mammals.

Development Needs: No development needs are identified at present.

Special Considerations: Other than controlling for reed canary grass, no other special considerations are identified for the Muskrat Lake Wildlife Management Area.



Figure 33. Photograph showing the Muskrat Lake WMA.



Figure 34. Map of Muskrat Lake WMA.

5.15 CARR CREEK WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area, with the sub-designation of Environmentally Sensitive Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 15.3-acre Carr Creek WMA is located on the northern bank of the Pend Oreille River approximately 5 miles west of Sandpoint, Idaho, sitting in an intersection between two railroad embankments (Figure 35Figure 36). Access to the WMA is by a short dirt road from Highway 2 or by boat. Acreages within the WMA are as follows:

- 12.3 acres Environmentally Sensitive
- 11.3 acres below 2,062.5 feet MSL elevation.

Description and Use: Carr Creek WMA hosts the floodplain of Carr Creek that has extensive mudflats, which are exposed upon drawdown. Overall, it has a flat topography with a mosaic of low uplands, emergent vegetation, and water. Vegetation on the uplands include hawthorns and associated deciduous shrubs and grasses. A small area of reed canary grass occurs on the east portion of the WMA at the lake's edge. Migrating waterfowl use Carr Creek heavily for feeding. Some waterfowl nesting may occur on the uplands. Songbirds and small mammals use the area for foraging, nesting, and denning. A small bank stabilization job was undertaken in 2021 and was completed in 2023 to address erosion concerns.



Figure 35. Looking toward the Carr Creek WMA from the Pend Oreille River.

Development Needs: The following development need was identified for the Carr Creek WMA:

- Potential bank stabilization due to erosion. The site sees significant wave action due to boats speeding up and slowing down at the railroad bridge.

Special Considerations: Special considerations involve controlling reed canary grass. The area continues to see expanded recreational use due to population growth.



Figure 36. Map of Carr Creek WMA.

5.16 HORNBY CREEK WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area, which includes the sub-classification of Environmentally Sensitive Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 30.9-acre Hornby Creek WMA is an isolated area on the northern bank of the Pend Oreille River upstream from Carr Creek WMA (Figure 37). The creek bisects the property from east to west, with small channels running north and south. In 1999, an acquisition was completed between USACE and Bonner County that added approximately 21 acres of property on the western border of the original site (6 acres are above 2,062.5 feet MSL elevation and 15 acres are below that elevation). In the WMA are the following sub-classification acreages:

- 21.7 acres Environmentally Sensitive Areas
- 19.3 acres below 2,062.5 feet MSL elevation.

Description and Use: Hornby Creek WMA is level with only a slight rise from the water's edge to the upland areas. Extensive mudflats are exposed upon drawdown. The WMA is dominated by wet meadows with reed canary grass and sedges. Overstory species include alder and Douglas fir, with associated upland shrub species. The site provides valuable habitat for a variety of waterfowl, beaver, white-tailed deer, and numerous small birds and mammals.

Bank stabilization work occurred in 2007, where about 1,000 linear feet of shoreline was protected at the Hornby Creek WMA. Habitat features incorporated into the bank stabilization work included willow and other riparian plantings. Willow plantings were placed at the summer high pool elevation (2,062.5 feet MSL) behind the rock protection. Native conifer and deciduous trees were also planted at the top of the bank. Plantings occurred within a 15-foot-wide zone with black cottonwood and Ponderosa pine placed randomly in a rough linear formation.

Development Needs: No development needs are identified at present.

Special Considerations: No special considerations are identified for the Hornby Creek Wildlife Management Area.



Figure 37. Map of Hornby Creek WMA.

5.17 SPRINGY POINT RECREATION AREA

Classification: High Density Recreation Area, with the sub-classification of Environmentally Sensitive Area.

Management Agency: USACE

Location and Acreage: The 32.2-acre Springy Point Recreation Area is located on the south shore of the Pend Oreille River 3 miles west of U.S. Highway 95. Within the recreation area are the following sub-classifications:

- 17.8 acres Environmentally Sensitive Areas
- 21.5 acres below 2,062.5 feet MSL elevation.

Description and Use: The recreation area consists of the following public use facilities: 38 campsites with no hookups, three park attendant sites with full hookups, swim area (Figure 38), boat ramp with courtesy dock, shower house/restroom, restroom, dump station, park office, reservable picnic shelter, paved roads, and graveled parking lots (Figure 39). The area is generally open from mid-May to mid-October, with walk-in use during the winter months. A derelict pit toilet was removed from “The Point” in 2020. Visitation averaged over a 5-year period (2018-2023) is 22,870 people per year.



Figure 38. Photograph showing the swimming area at the Springy Point Recreation Area.



Figure 39. Map of Springy Point Recreation Area.

Development Needs: The following development needs are identified for the Springy Point Recreation Area:

- Redesign and rehabilitate campsites.
- Repair and pave/repave roads and trails. For repaving, extensive work needs to be done due to issues with leveling, particularly drainage in the parking lot. Paving would assist with parking issues and keep dust down.
- Add and harden surface trails for accessibility.
- Renovate picnic area for accessibility.
- Replace restrooms and adding shower facilities in Cedar Loop.
- Continued maintenance of the trail due to erosion on the southwest corner of the property.
- Install fencing to delineate boundary on west line.
- Bank stabilization to protect the north end of the property “The Point” from erosion due to wave action from the lake.
- An easement to access “The Point” is needed to ensure proper maintenance and visitor assistance.

Special Considerations: “The Point” at Springy Point Recreation Area is a landlocked property that experiences heavy day use during the summer. The spot is popular due to the shallow sand that acts as a sandbar. Access is a challenge for staff to the site to provide visitor assistance and remove trash due to lack of landward access.

5.18 PONDER POINT WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area, which includes the sub-classification of Environmentally Sensitive Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: Ponder Point WMA is located south and west of the town of Ponderay between the railroad and shoreline (Figure 40) and is accessible by foot and boat. Total acreage is 5.6 acres, with 2.6 acres designated as Environmentally Sensitive.

Description and Use: Prior to 1996, Ponder Point Management Unit was a separate and small parcel, 1.25 acres that was included as part of license with IDFG for Oden Bay WMA. With the 1996 land exchange (section 5.13), USACE received 6.2 acres bordering Ponder Point. This acreage has no county zoning assigned but is part of the total USACE-owned fee lands.

Ponder Point WMA is located on a south-facing slope. Most of the lower portion near the lake’s edge was protected from erosion by riprap placed in 1995 and 1996 as part of a railroad protection project. The upper portion is composed of slopes with depressions in which water is ponded. Vegetation is composed primarily of mixed tree species, including conifers and deciduous trees associated with wet areas. A wide diversity of

animals typical of wetland habitats use the area for foraging and breeding. Osprey have been observed nesting on the site, and waterfowl use the ponded areas. A wide variety of songbirds and small mammals use the site throughout the year.

Development Needs: No development needs are identified at present.

Special Considerations: Continue to explore partnership opportunities with the Friends of the Pend Oreille Bay Trail to install a trail connector from Sandpoint to Kootenai. Currently the property is accessed via a community path from the Pend Oreille Bay Trail.



Figure 40. Map of Ponder Point WMA (part of Oden Bay WMA).

5.19 ODEN BAY WILDLIFE MANAGEMENT AREA

Classification: Multiple Resource Management – Wildlife Management Area, which includes the sub-classification of Environmentally Sensitive Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 397.8-acre Oden Bay WMA is located on the north shore of Lake Pend Oreille approximately 6 miles from Sandpoint, Idaho (Figure 41). The WMA consists of two separate parcels: one on the northern end of the bay, and the larger parcel on the eastern end of the bay. Both parcels are accessible by vehicle from Highway 200. Within the WMA are the following acreages:

- 397.8 acres Wildlife Management
- 317.4 acres Environmentally Sensitive
- 324.2 acres below 2,062.5 feet MSL elevation.

Description and Use: The north parcel in Oden Bay consists primarily of water, with a small upland area that gradually slopes up from the water's edge. The east parcel consists of a floodplain between two hills, with the floodplain covering most of the site. Five small islands occur off the southern end of the east parcel. Extensive mudflats are evident throughout the area during winter drawdown. IDFG manages a small parking lot that is frequented by hikers and day users who traverse a trail to the water. The area has seen an increase in recreational use over the past few years.

The vegetation of the main parcel is extremely diverse, with ponderosa pine/Douglas-fir and Douglas fir/western red cedar forests on the rocky slopes. Abandoned pastures occupy the flat meadowlands with shrubs and aspen groves along the edges. Land-locked wetlands and a small pond are concentrated in a small area between the hills. Shorelines on the north edge of the main unit consist of riparian plant species including invasive reed canary grass, with a rocky shoreline on the south shore dominated by dryland vegetation. Upland shrubs and grasses dominate the two smaller parcels.

The wetland areas are essential habitat for many wildlife species including large numbers of waterfowl. Redhead ducks use the area extensively during fall and early winter. Geese nest and feed in the marshes, meadows, and upland pastures. Osprey and eagles forage on fish and the waterfowl concentrated at the site. Mammals including white-tailed deer and beaver use the area for foraging. Small mammals and songbirds, including riparian and forest species, fulfill all life requisites on the site.



Figure 41. Map of the Oden Bay WMA.

Development Needs: No development needs are identified at present.

Special Considerations from Prior Public Scoping: A special consideration identified involves boundary demarcation and rectification. In addition, IDFG identified a need to remove some of the conifer component (about 2-3 acres) within aspen stands to improve aspen recruitment. IDFG also suggested the development of a new boating access site off Sunnyside Road adjacent to an existing trailhead. IDFG recommended the access site include a roadway, parking area, boat ramp, dock, and restroom facilities.

5.20 PACK RIVER DELTA WILDLIFE MANAGEMENT AREA

Classification: The Pack River Delta WMA has two land classifications:

- Multiple Resource Management – Wildlife Management Area
- Environmentally Sensitive Area.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The 1,374.8-acre Pack River Delta WMA is located on the north shore of Lake Pend Oreille approximately 10 miles east of Sandpoint, Idaho. The Pack River enters lake Pend Oreille creating a delta through which the unregulated river flows (Figure 42). Within the Pack River Delta WMA are the following acreages:

- 1,374.8 acres Multiple Resource Management – Wildlife Management Area
- 1,246.1 acres Environmentally Sensitive Area
- 1,255.0 acres below 2,062.5 feet MSL elevation.

The WMA begins at the Pack River Bridge, Highway 200, and extends south beyond the Burlington Northern Railroad, encompassing the delta lands between the Highway 200 embankment and the toe of the mountain slopes on the west side.

Description and Use: Most of the WMA is submerged, with extensive narrow shoreline areas above water. Water channels meander through the bottomlands, leaving exposed land in small islands and strips. The parcel is level except for the slopes along the highway embankment and the shoreline along the western mountains. Extensive mudflats are evident throughout the delta during periods of drawdown. Reed canary grass dominates the emergent wetland vegetation. Aquatic plant growth is abundant in the shallower areas. Some of the drier upland areas consist of shrubs with associated grasses. Coniferous forests with mixed deciduous tree species stand along both edges of the delta.

IDFG completed a multi-partner wildlife habitat restoration project in the Pack River Delta to the north of the railroad in 2009. The enhancement project increased the height and stability of a portion of the summertime submerged delta islands to improve

their functionality and availability to birds year-round (Figure 43). The goal of the project was to increase geomorphic and vegetative diversity in the delta lost primarily due to the operations of AFD. A secondary goal of the 2009 restoration effort was to determine if the construction and planting methods could be applied to protect and improve wildlife habitats in the Clark Fork River Delta.

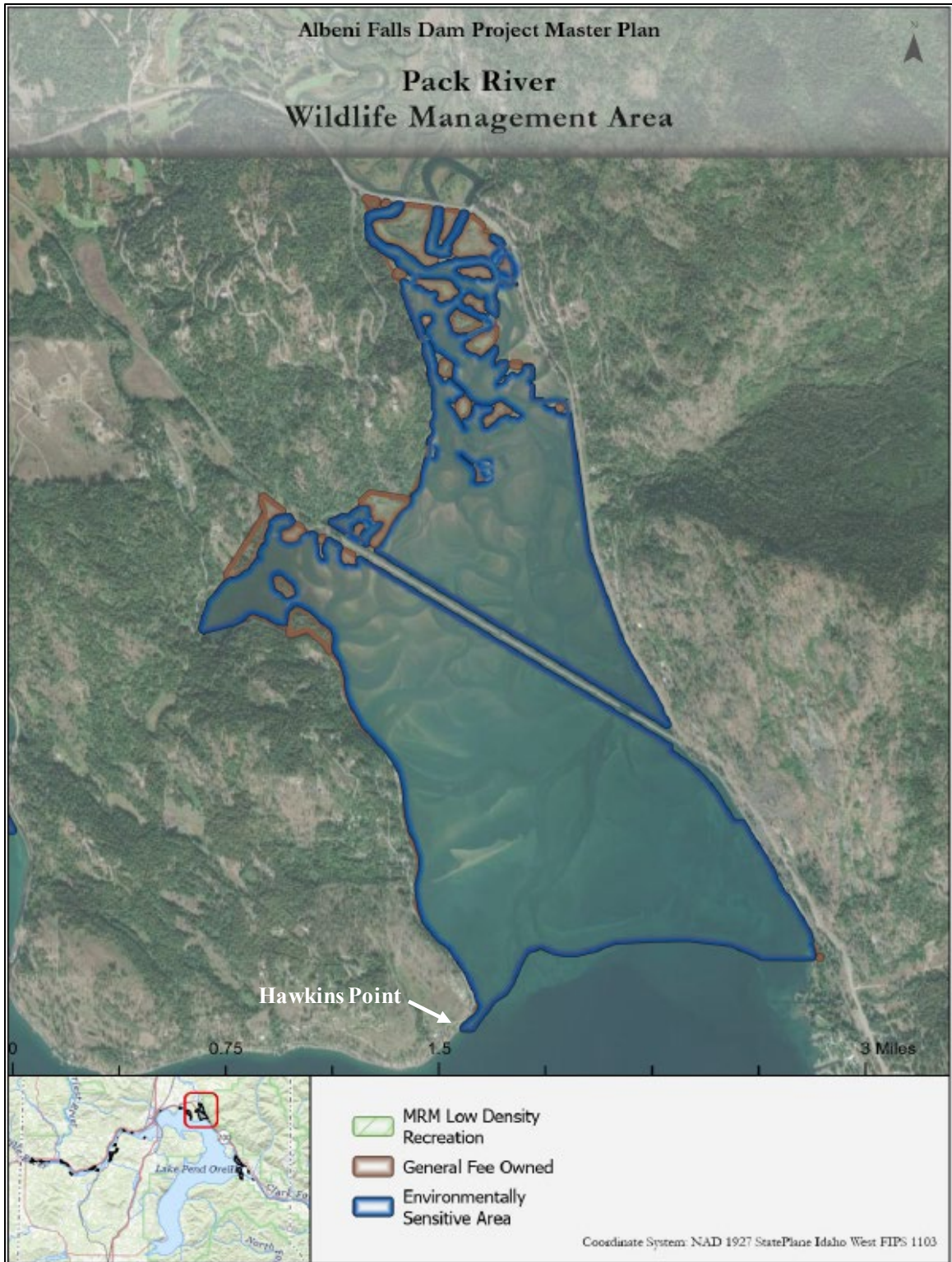


Figure 42. Map of the Pack River Delta WMA.



Figure 43. Photograph showing the vegetation in 2012 on Island 8 of the Pack River Delta Restoration Project (source: K. Cousins).

Eight islands were created in the restoration effort, as well as a variety of engineered log structures and soil bioengineering. A substantial seeding and planting effort (over 9,000 shrubs/trees and 15,000 emergent plants) accompanied the construction phase and into the early spring and fall. Monitoring of the restoration efforts proved that these methods were successful and so work began in the Clark Fork River Delta in 2015.

A second restoration effort in the Pack River Delta was completed in 2023, with the construction of ten new islands with emergent benches. About 29,500 willows were installed into the armored island shorelines during construction, and about 1,300 shrubs and 17,000 emergent plugs planted in the spring/summer. IDFG also constructed roadway from HWY 2 to a 0.4-acre staging area that was raised to 2,067.0 feet MSL. This staging area remains after the construction to provide public access to the delta. A third

restoration effort is being planned in the Pack River Delta in an area south of the railroad and is slated to be complete in 2026.

A wide diversity of animals typical of wetland habitats use the area for foraging and breeding. Moose feed on submerged vegetation and migrating and wintering waterfowl congregate on the site. Since the completion of the restoration efforts in the delta, there has been a noted increase in the number of waterfowl visiting the area and increased sightings of moose, elk, and other wildlife. A wide variety of songbirds and small mammals use the site throughout the year. Kamloops rainbow trout and kokanee salmon, as well as other important game fish species, pass through during fall and spring spawning periods.

Development Needs: The following development need is identified for the Pack River Delta WMA:

- Control of aquatic invasive weeds

Special Considerations: Special considerations identified involve boundary demarcation as several encroachments exist on the property. IDFG is implementing wildlife habitat restoration projects in the delta to protect the land from erosion and diversify native vegetation.

5.21 HAWKINS POINT RECREATION AREA, PACK RIVER DELTA WILDLIFE MANAGEMENT AREA

Classification: The Hawkins Point Recreation Area is classified as Multiple Resource Management – Low-Density Recreation.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: Hawkins Point is located at the southern-most tip of a cape that extends from the northern shore of Lake Pend Oreille and consists of about 0.2 acres (Figure 44).

Description and Use: The Hawkins Point Recreation Area has a boat ramp, dock, and vault toilet, all of which are maintained by IDFG. Hawkins Point provides public access to the Pack River Delta during summer months when the lake is at its highest elevation.

Development Needs:

- Expansion of the parking lot and redesign of the boat turnaround is needed.
- Other development opportunities include rehabilitating the southwest corner of the property where a long-term encroachment existed.

Special Considerations: A long-term encroachment was resolved in 2025, and continued deterrence of future encroachments is extremely important.



Figure 44. Map of Hawkins Point Recreation Area, part of the Pack River Delta WMA.

5.22 TRESTLE CREEK RECREATION AREA

Classification: Trestle Creek Recreation Area is classified as Recreation.

Management Agency: USACE

Location and Acreage: The 8.8-acre Trestle Creek Recreation Area is located 2 miles north of Hope, Idaho, along State Highway 200, along the northeastern shore of Lake Pend Oreille (Figure 45). Of the total acreage, 6.6 acres are considered Environmentally Sensitive, and 7.3 acres are below 2,062.5 feet MSL elevation.

Description and Use: Public use facilities include vault restroom, swim area, picnic area, paved roads, parking areas, and boat ramp with courtesy dock. The recreation area is open from April to October, with walk-in use during winter months. Visitation averaged over a 5-year period (2018-2023) is 23,450 people per year.

The recreation area is park-like with a flat topography, an overstory of old cottonwoods over lawn. An aspen grove is found adjacent to the entry road. This habitat supports osprey, bald eagle, and migratory songbirds. The gauging station to measure the elevation of Lake Pend Oreille is housed on the property.

Development Needs: The following are development needs identified for the Trestle Creek Recreation Area:

- Install, replace, or maintain fencing.
- Place boulders on lawn/road edge to manage vehicle access.
- Repair and repave roads and trails.
- Replace restroom.
- Rehabilitate beach.
- Add and maintain hard-surface trails for accessibility.
- Renovate picnic area for accessibility.
- Bank stabilization from beach to gage well.
- Install potable water.
- Install a park attendant site.

Special Considerations: Managing visitation growth with potential of expansion of recreation opportunities on the adjacent properties.



Figure 45. Map of Trestle Creek Recreation Area.

5.23 CLARK FORK RIVER DELTA WILDLIFE MANAGEMENT AREA

Classification: The Clark Fork River Delta WMA has three land classifications:

- Operations with Environmentally Sensitive Areas
- Multiple Resource Management – Low Density Recreation with Environmentally Sensitive Areas
- Multiple Resource Management – Wildlife Management.

Management Agency: IDFG, by license, within the Pend Oreille WMA.

Location and Acreage: The Clark for River Delta is about 5,600 acres. USACE lands (1,311.4 acres) are located where the Clark Fork River enters Lake Pend Oreille and represent about 23 percent of the total delta area (Figure 46). IDFG manages all USACE lands in the delta except for the Drift Yard Facility. Three geographical units compose the Clark Fork River Delta WMA and are described below. Acreages within the Clark Fork River Delta WMA are as follows:

- 59.4 acres Operations, Unit 1 - Drift Yard Facility
- 8.81 acres Low Density Recreation, Unit 2 - Johnson Creek Recreation Area
- 1,243.2 acres Wildlife Management
- 768.4 acres Environmentally Sensitive Area
- 580.6 acres below 2,062.5 feet MSL elevation.

Unit 1 – Drift Yard Facility

On the north side of the delta, Denton Slough and the Clark Fork Drift Yard Facility are bordered by the Highway 200 embankment (Figure 47), with access from pull-offs on the highway or on a graveled road through the drift yard area. In addition, two small parcels exist on the north side of Highway 200, with another small, narrow strip on the south side of the river. Lastly, another small parcel is found southeast of the drift yard between the Burlington Northern Railroad and the north fork of the river.

Unit 2 – Johnson Creek Recreation Area

The southern portion of the delta includes several islands and the Johnson Creek Recreation Area (Figure 48), which is accessible from a graveled county road running on the south side of the river. Restoration efforts secured the shorelines and improved the boat access area in 2020.

Unit 3 – Wildlife Habitat Restoration Areas

Recreation areas are accessible by boat (Figure 49). In addition, two small parcels exist on the north side of Highway 200, with another small, narrow strip on the south side of the river. Lastly, another small parcel is found southeast of the drift yard between the Burlington Northern Railroad and the north fork of the Clark Fork River.

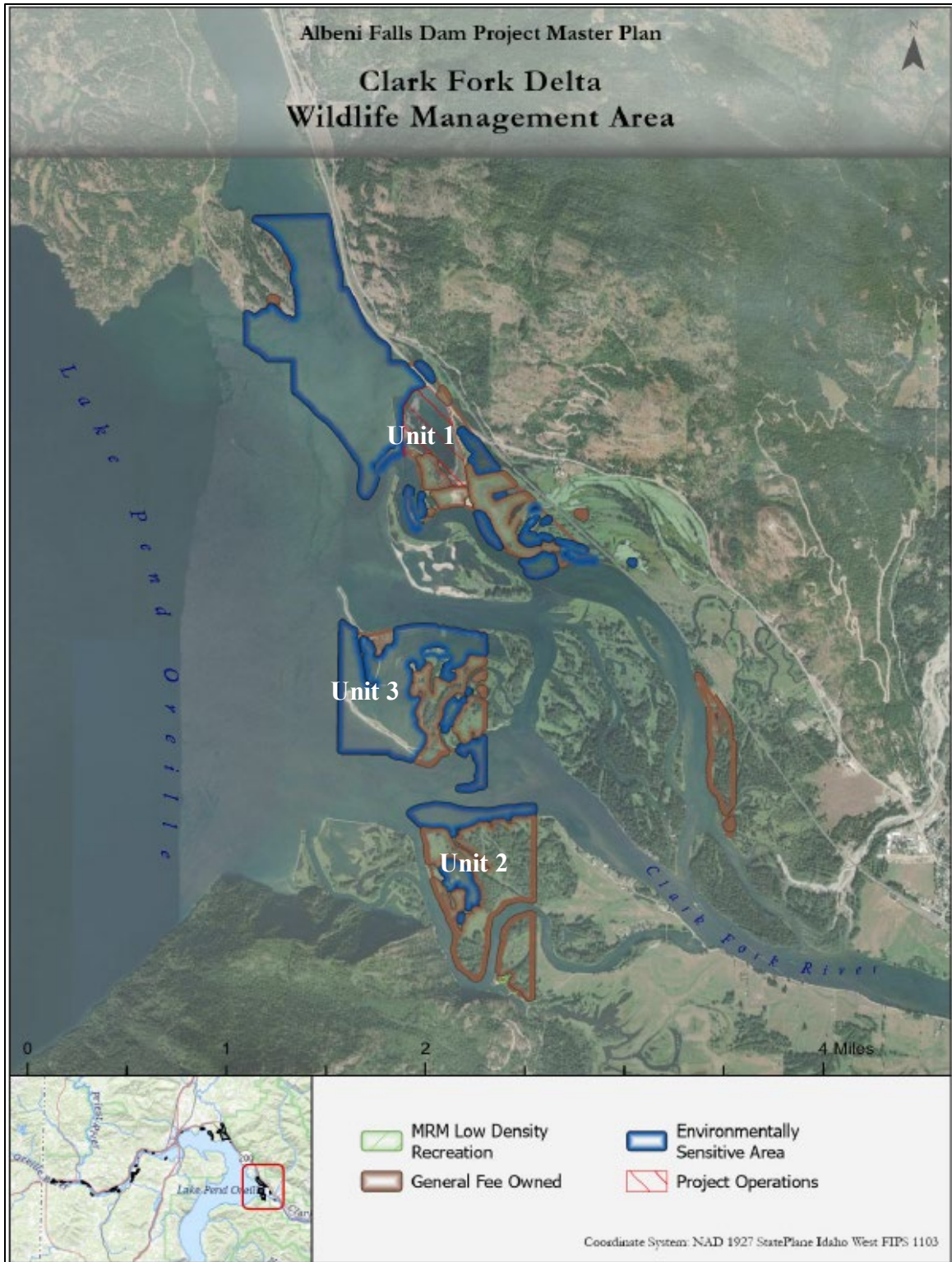


Figure 46. Map of Clark Fork River Delta WMA showing the locations of the three WMA units. Unit 1 = Drift Yard Facility; Unit 2 = Johnson Creek Recreation Area; Unit 3 = Clark Fork River Delta Wildlife Habitat Restoration Area.



Figure 47. Map of Clark Fork River Delta WMA Unit 1, the Clark Fork Drift Yard Facility and Recreation Area.



Figure 48. Map of Clark Fork River Delta WMA Unit 2, the Johnson Creek Recreation Area.



Figure 49. Map of Unit 3, Clark Fork River Delta Wildlife Habitat Restoration Area.

Description and Use: The Clark Fork WMA is typical of river delta lands and consists of meander channels and marshy islands intermixed with higher shoreline edges. Most of the drylands are level to slightly undulating, with pockets of wetlands in the lower elevations. Extensive mudflats are evident throughout Denton Slough and the drift yard area during periods of drawdown.

IDFG maintains facilities at both Johnson Creek Recreation Area and the Clark Fork Drift yard. Limited, 3-day camping is allowed, although, there is not a designated campground. Both locations are accessed by gravel roads and have gravel parking areas. Neither location has potable water. Facilities at Johnson Creek Recreation Area include a paved boat launch, dock, and vault toilet. Facilities at the drift yard include paved boat launch, dock, ADA compliant parking space, and ADA compliant portable toilet, plus two storage buildings.

The vegetation in the Clark Fork WMA forms a complex mosaic of submerged, emergent, and floodplain habitats. Reed canary grass is the dominant emergent vegetation with small pockets of cattail. They surround open-water areas having submerged aquatic vegetation. Mature riparian forests cover higher floodplain lands, including coniferous and deciduous species, with associated shrub species. Shrub wetlands dominate small areas of lower land.

The delta has a rich variety of wetland habitats and supports major breeding populations of ducks, geese, osprey, and great blue heron. Waterfowl use the area as wintering grounds. Elk, moose, mule deer, and black bear have been observed in the area, and there is a resident population of white-tailed deer. Bull trout, rainbow trout, and kokanee, as well as other fish species pass through during fall and spring spawning periods.

In 2014, 2020, and 2022, IDFG, BLM, USACE, BPA, and other cooperating agencies began construction on wildlife mitigation restoration projects in the Clark Fork River Delta. Most of the restoration effort is on lands owned by USACE and managed by IDFG. The restoration project, encompasses multiple land ownerships, and proposed to protect, improve, and restore key riparian, aquatic, and wetland habitats, improving their ecological functions in the delta by increasing sediment deposition, increasing emergent wetland habitats, capturing woody material, and reducing shoreline erosion. Construction work was completed in 2022 (Figure 50).

Development Needs: Bank stabilization of eroding shorelines and control of aquatic (Eurasian watermilfoil and flowering rush) and terrestrial weeds are the development needs identified.

Special Considerations from Prior Public Scoping: IDFG recommends expanding the boat ramp and dock into a two-lane ramp at the Clark Fork Drift Yard access site to better handle the increasing use at the site. Protection of the drift yard from wind

driven waves is also needed. USACE is designing an extension to one of the breakwaters to the west of the drift yard and constructing a new breakwater where the river meets the lake.



Figure 50. Photograph looking toward the south showing the wildlife habitat restoration efforts completed on Unit 3 (USACE lands) in the Clark Fork River Delta. A portion of Unit 1 (Drift Yard Facility) is shown toward the south (source: Ducks Unlimited 2022).

6 SPECIAL TOPICS/ISSUES/CONSIDERATIONS

This chapter focuses on topics unique to AFD and USACE properties along the Pend Oreille River and Lake Pend Oreille. While the Master Plan does not address the operation of the dam or water management, having a basic understanding of the Project's operations highlights some of the limitations and challenges as it relates to the management and development of the project's lands, natural resources, historic properties, and recreational activities. The information below is presented as additional information for the project.

6.1 LAKE LEVEL

6.1.1 Reservoir Management

The Pend Oreille River at AFD has a watershed of 24,200 square miles, which supplies a mean discharge of 25,930 cfs. Lake Pend Oreille is a natural lake that is located in the glacially scoured basin in the Purcell Trench in northern Idaho, making it one of the deepest and largest lakes in the western United States. The Clark Fork River, emptying into the northeast corner of the lake, is its single largest tributary, contributing about 85 percent of the input. The Pend Oreille River begins at the outflow of Lake Pend Oreille near Dover, Idaho. Conditions in Lake Pend Oreille and the Pend Oreille River, such as the stage of the reservoir and timing of the inflow, are influenced not only by AFD, but also by the operation of hydroelectric projects on the Clark Fork River and basin hydrologic factors. AFD operations target the schedules described below.

6.1.1.1 Fall storage drawdown and lake stabilization period.

The lake may be drafted after Labor Day, but in practice starts the third Sunday in September or September 18 (whichever is later), targeting an elevation of 2,051.0 feet above MSL. This is called the minimum control elevation (MCE). During September, the target draft is to reach the MCE by mid-November. The November objective is to stabilize the lake within a 0.5-foot range of the MCE to support kokanee spawning, and to prepare for the winter flood season and draft for power in the fall and winter. Throughout December, the lake level is managed to avoid dewatering kokanee redds (gravel nests); kokanee is a key prey source for ESA-listed bull trout. These operations also support flows for ESA-listed salmonids in the lower Columbia River, particularly chum.

6.1.1.2 Winter holding period.

During the winter holding season, (from approximately January through March) the lake level is held to no lower than the MCE. Lake storage above the MCE may be used for occasional flood management or hydropower operations without resetting the MCE, but storage above elevation 2,056.0 feet MSL must be evacuated by April 1 for flood management.

6.1.1.3 April through June flood season.

During the spring flood season (from approximately April through June), the objective is to manage runoff for flood risk management. The project will frequently operate on "free flow" to pass as much water as possible through the project to help minimize flood elevations on Lake Pend Oreille. AFD operations during this time also support flows in the lower Columbia River for ESA-listed salmon. The lake is typically held no higher than 2,056.0 feet MSL for flood storage but may be raised to manage floods. After the threat of spring flood risk has passed, operations begin to refill the lake to reach the summer target elevation of between 2,062.0 and 2,062.5 feet MSL. Largescale flooding may occur when lake elevations are greater than 2,062.5 feet MSL.

6.1.1.4 Summer conservation period.

During the summer, the lake elevation is held between 2,062.0 and 2,062.5 feet MSL starting from the end of the spring runoff (June or early July depending on stream flows) until approximately mid-September. The objective is to maintain a lake level to support recreational uses.

6.1.2 Shoreline Effects

As the water level of Lake Pend Oreille fluctuates between summer elevations at 2,062.5 feet MSL and winter elevations at 2,051 to 2,056 feet MSL, soils that are normally not subjected to long-duration flooding are being inundated for many weeks.

6.1.2.1 Wave Action

AFD has altered the hydrograph of Lake Pend Oreille, thereby affecting shoreline vegetation. By maintaining high lake levels throughout the summer, vegetation around the reservoir at points below this elevation has substantially decreased. This has resulted in relatively barren shorelines during lower winter lake elevations, increasing susceptibility of the shoreline to erosion relative to the pre-dam condition. Shoreline erosion in Lake Pend Oreille outside the Pack River and Clark Fork River deltas is caused by a combination of erosion from wind-generated waves, freeze-thaw processes at the air-water interface of the lake, groundwater-induced sliding, and boat wakes (Gatto and Doe 1987). The same processes that cause erosion on the lakeshore also cause erosion on the Pend Oreille River between Lake Pend Oreille and AFD. High flows during spring runoff events also add to the shoreline erosion problem. Another source of shoreline erosion is from boat wake. Although Bonner County Code¹⁰ Title 3-105 defines a 200-foot no-wake buffer from shorelines, many boaters are either unaware or ignore the ordinance. More recently, wakeboard boats that create a larger wave (4.5-5-foot height) than traditional boats have become a point of concern and local controversy.

When the lake level is operated at either elevation 2,051 feet or 2,056 feet MSL during the winter months, the shoreline erosion is typically concentrated at or very near this targeted elevation. Wind-wave and freeze-thaw effects occur at a fixed elevation along

¹⁰ In Idaho, individual counties can set local rules (Idaho Safe Boating Act, Idaho Statue 67-7031(4) Marking of Water Areas).

the shoreline for the duration of the operation period, maximizing scour at that location. The erosion rates vary widely and are dependent on the exposure of the shoreline to the wind-generated waves, as well as on the type of substrate along the shoreline. Many bank protection actions have been implemented by both public and private entities to address erosion issues in certain areas.

6.1.2.2 Historic Properties

The kind of effect by waves at any given location depends on beach slope, sediments, and fetch and reach factors. Whether an effect is considered adverse or not depends upon whether the archaeological site is eligible to the National Register of Historic Places (NRHP) under Section 106 of the NHPA. Submerged archaeological sites close to the water surface may also be subject to loss of stratigraphic integrity through erosion by plucking and scour from wave turbulence. This kind of effect, however, is less likely than that resulting from scarp cutting at the pool margin. Archaeological sites also may be affected by plowing caused by high winds driving broken ice into them, although adverse effect caused by this mechanism probably is a rare occurrence. On the east side of Lake Pend Oreille, rock art sites are located within the zone affected by winter drafting. These rock art sites are being affected mainly from erosion caused by the action of wave-suspended abrasive particles, rock spalling from wave-induced hydraulic pressure in joints and voids in the rock, and mechanical effects of ice expansion in substrate joints. The most common adverse effects to archaeological sites are those caused by the raising and lowering of the water column with the operation of AFD. Archaeological sites located along the bank line experience long periods of submergence followed by long periods of exposure. This cycle causes erosion and slumping of the bank face.

6.1.2.3 Boating and Boat Ramps

Both motorboats and sailboats are commonly used on the lake. Some boat owners store their boats in the water year-round. Both public and private boat ramps are available for launching boats in several locations both on the lake and on the river when the lake and river are ice-free. Lake elevations affect accessibility of boat ramps, and usability of docks as many dock platforms are fixed above high pool elevation and are thus well above water when the lake is drawn down. At low-pool, many of the boat ramps are not long enough to allow safe boat launching when the water is ice-free. These effects, when combined, limit boating activity to summer high-pool use.

6.2 ALBENI FALLS DAM FISH PASSAGE FACILITY

Future improvement goals at the dam include construction of a fish passage facility (FPF) to facilitate upstream passage of ESA-listed bull trout. Westslope cutthroat trout will also be passed upstream into the forebay as a surrogate species for bull trout. Once the 2018 BiOp is updated, the list of native species to be passed upstream through the future FPF may be added to (i.e., Mountain Whitefish). The AFD FPF authorization is included under the original authorization for construction of the dam (section 1.1). The FPF project is currently working towards 100% design through an Architectural and

Engineering (AE) firm via a Multiple Award Task Order Contract (MATOC), and it is expected to begin construction in 2028, pending funding availability. Operations and maintenance of the facility were addressed in the AFD FPF BiOp, completed in 2018. The FPF will be a trap and haul facility located on the rock island between the dam's powerhouse and spillway. For upstream-migrating bull trout that pass through the facility, benefits will include regained access to over 800 miles of mainstem, tributary, and lakeshore critical habitat that would be used for foraging, spawning, and overwintering, as well as cold water refuge during periods of elevated water temperatures in the summer months. The benefits will also accrue to bull trout populations by reconnecting fragmented populations, increasing genetic diversity, reestablishing life history features, and promoting a broad geographic representation. Pending funding availability, the FPF is currently estimated to finish construction and begin operations in 2032.

6.3 REAL ESTATE

6.3.1 Encroachments and Trespasses

Adjacent land uses can put additional pressure on or detrimentally affect USACE lands. These pressure factors include subdivision development, illegal dumping, encroachment, and trespass. These can bring about increased costs for fence repairs, garbage and refuse removal, purchase of plants, and staff time for revegetation of unauthorized trails. Encroachments and trespasses from adjacent property owners include construction of docks, waterlines, and outbuildings. In general, encroachments and trespasses on easement lands may occur where unauthorized structures (habitable, outbuildings, hunting blinds, or boat moorings) have been constructed or placed in easement areas in violation of the terms of the easements. Encroachments and trespasses are resolved through written or personal communication by IDFG or USACE staff.

Since the implementation of the Flood Control Act of 1950 and government acquisition of lands along the river to mitigate flooding risks, river elevations have caused portions of the acquired lands to become partially submerged. Recent observations by USACE Seattle District Real Estate and the project office reveal an increase in encroachments, docks along the shoreline, and overall misunderstandings regarding ownership of these remaining lands. To address this issue and provide USACE Seattle District Real Estate with the necessary resources and legal support to resolve encroachments, a comprehensive site-wide survey of the land and monuments along the shoreline (including submerged lands) is recommended. The comprehensive site-wide survey will clarify ownership boundaries and facilitate the resolution of ownership disputes.

6.3.2 Legal Issues

Vandalism, timber theft, and encroachments continue to be a problem on USACE Lands. Vandalism issues have included graffiti, structural damage, lock cutting or gatecrashing

in closed areas, break-ins (vehicles and structures), shooting of signs, looting of archaeological sites, and the removal of artifacts from USACE lands.

Although WMA lands are administered by IDFG, Federal regulations still apply, and the removal of timber, parts of trees, and wood is prohibited (Title 36 §327.14(b)). Woody material in the Clark Fork drift yard is classified as “drift” and removal of this wood within the confines of the drift yard is allowed. Off-site tree and wood removal damages wildlife and fisheries habitat, preservation of which is one of the specific purposes of a WMA. Unpermitted collection of wood on USACE lands also detrimentally affects forest health, and can cause safety issues (property damage, life, and health, etc.).

Depending on the type and severity of any legal issue, a particular situation may be handled by IDFG, AFD staff, USACE Seattle District staff, Bonner County Sheriff’s Department, or U.S. Attorney’s office.

6.4 FCRPS AFD COOPERATING GROUP

The FCRPS Albeni Falls Dam Cooperating Group (Cooperating Group) is mandated by the Systemwide PA for the FCRPS cultural resources program. The Cooperating Group comprises technical staff from USACE, BPA, USFS, the Idaho SHPO, the Coeur d’Alene Tribe, the Confederated Salish and Kootenai Tribe of the Flathead Indian Reservation (CSKT), the Kalispel Tribe of Indians, and the Kootenai Tribe of Idaho. The group meets quarterly to discuss management of historic properties and archaeological resources.

6.5 SEAPLANE OPERATIONS

Seaplane takeoff and landing maneuvers are allowed no earlier than 30 minutes before sunrise and no later than 30 minutes after sunset. Takeoff and landing maneuvers are prohibited within 500 feet of any bridge, causeway, overhead power line, dock, dam, or similar structure including 500 feet from the shorelines at Riley Creek, Priest River, Albeni Cove, Springy Point, and Trestle Creek. In an emergency, pilots may land inside the 500-foot buffer. Seaplanes are prohibited from mooring to any public courtesy boat dock. Bonner County Ordinance 3-601 restricts seaplanes from landing or taking off near AFD. The complete policy with maps can be found in Appendix G.

7 AGENCY AND PUBLIC COORDINATION

Master Plan scoping occurred between June 24 and July 31, 2024. The public announcement for project scoping was provided to local papers and sent out via email on June 7, 2024. Comments were collected on-line and at two public scoping meetings. The open-house public meetings occurred on June 24, 2024 (1:00 pm-3:30 pm) at the Priest River Event Center, Priest River, Idaho, and June 25, 2024 (5:00 pm-7:30 pm) at the Ponderay Event Center, Ponderay, Idaho.

A total of 7 members of the public attended the open-house meetings. Comments collected at the scoping meetings included concerns regarding encroachments and the

need to provide more ADA accessibility to facilities at recreation areas. A member of the public suggested formalizing a foot path to a trail that the public has created over time at the Albeni Cove Recreation Area. This foot path spans from the Albeni Cove “Fishing Hole” to the boat ramp. Another comment from the public suggested creating an easement for a connector trail through the Upper Vista Recreation Area.

8 SUMMARY OF RECOMMENDATIONS

Development of the AFD Master Plan allows for enhancement of public recreational opportunities and improvement in the environmental quality for the present and future longevity of the project. It requires continued involvement of the public and recreational user groups, as well as Federal, state, and local agencies. This input will aid in the efficient, effective, and timely implementation of resource use objectives as funding becomes available. It requires the appraisal of natural resources and historic properties around the reservoir and the examination of environmental considerations. This Plan will guide the use, development, and management of the AFD reservoir in a manner that optimizes public benefits within resource potentials and the authorized function of the project while remaining consistent with USACE’s policies, regulations, and environmental operating principals. The plan is stewardship-driven, seeking to balance recreational development and use with protection and conservation of natural resources and historic properties.

8.1 BOUNDARY SURVEYS AND MONUMENTATION

Boundary surveys and delineation of Federal property (signs or fencing) need to be completed. This is an ongoing effort as funding becomes available. It will aid managers and inform visitors where specific activities are acceptable and aid in prevention of encroachments and trespasses.

USACE-owned lands were partially surveyed and monumented in the 1970s. Several areas that were missed were revisited in the 1980s for 100 percent completion of the surveys. In 2000, management areas that had questionable or missing monuments were identified and these areas were resurveyed in 2000 and 2001 by USACE surveyors and contract surveyors. Monuments or pins were re-established at this time.

Outgrants are inspected annually by USACE Seattle District Real Estate Office. In addition, AFD personnel inspect USACE-managed lands while conducting routine activities.

8.2 HISTORIC PROPERTIES

Historic properties are abundant along the shoreline of the Pend Oreille River and Lake. A Historic Property Management Plan (HPMP) was developed for the AFD Project under the auspices of the FCRPS and was a product required under the Systemwide PA. The HPMP provides guidance for the management of these resources at AFD. This plan is currently and will continue to be implemented at AFD. The HPMP includes the following:

- Information about all archaeological and tribal resource types at AFD.
- Information on the nature and sources that are affecting these resources.
- Information on public outreach.
- Information on actions needed to identify, evaluate, and manage historic properties.

In addition to the HPMP, the following activities are on-going:

- Quarterly meetings with the AFD cooperating group.
- Continuing consultation with stakeholders.
- Survey of lands that have not been previously surveyed.
- Determination of eligibility on unevaluated archaeological sites.
- Public outreach.
- Maintaining a GIS data layer for historic properties, archaeological resources, and HPRCSITs.

The following activities should be implemented:

- NHPA training for new staff at AFD whose job may require them to work near or around historic properties and archaeological sites (Natural Resources and Maintenance Staff).
- Continue the HPMP activities and partnerships as described above.

8.3 PARTNERSHIPS AND VOLUNTEERS

Partnerships and volunteers are one way for USACE to keep a high standard of service along with expanding programs within its authorized missions. In today's challenging fiscal environment, it is imperative for USACE to work with local, state, and other Federal agencies, special interest groups, and individuals towards common goals. These goals can range from combating invasive species, growing community events, to watershed-based efforts (e.g., water quality). Highlights of partnership efforts include the following:

- USACE Northwestern Division Winners of Excellence in Partnership Awards:
 - 2014 – Idaho Department of Parks and Recreation – Life jacket loaner boards
 - 2015 – IDFG – Wildlife Restoration project at the Clark Fork River Delta
 - 2016 – ISDA – Boat inspection station and invasive species control
- Partnership with NRCS for the Pend Oreille Water Festival (1995 – present).
- Partnership with the Pend Oreille River Paddling Association
- Partnership with Priest River Youth Sports Association.

8.4 UPDATE MANAGEMENT PLANS

8.4.1 Invasive Species and Integrated Pest Management Plan

An integrated pest management plan is needed for the AFD Project. Historically, the detection, control, and treatment of aquatic invasive plants (Eurasian watermilfoil and flowering rush) has been a focus at the AFD Project. Staff have made progress in developing treatment plans for the aquatic weeds, however, terrestrial noxious weeds have not received the same attention in past Master Plans. In particular, reed canary grass, now dominates wildlife habitat cover types on all USACE lands and greater attention is required for the detection, control, and treatment of this terrestrial invasive weed.

Similar to the aquatic invasive weeds identified as threatening to the ecological integrity of the nearshore habitats, reed canary grass is identified as a threat to the ecological integrity of wetland habitats. Reed canary grass reduces botanical and biological diversity by dominating the landscape, alters hydrology by trapping silt and constricting waterways, and limits regeneration of cottonwoods and other tree species in riparian forests by shading and crowding out seedlings. Appendix B provides more detailed information on reed canary grass, as well as information on invasive aquatic weeds and the efforts taken to date to address their proliferation.

Invasive mussels (Zebra and quagga mussels) and Asian clam are also species that could cause serious economic problems if they were able to become established in the Pend Oreille basin. The mussels can colonize rapidly on hard surfaces, clogging water intake structures and removing substantial amounts of phytoplankton and suspended particulate from the water, which decreases the food source for zooplankton, therefore altering the food web (USGS 2017). USACE conducts surveys (veliger sampling) in the Pend Oreille basin, and the ISDA conducts boat inspections to monitor for these species, and to date they have not been found. However, Asian clams were detected in Ellisport Bay (near the town of Hope) in 2012.

The development of an integrated pest management plan will benefit the AFD Project by setting priorities, goals, and objectives, establishing practices (i.e., identification, prevention, and monitoring), and providing guidance and various treatment methods. No single method will work under all conditions. Chemical formulations are constantly changing and new products to treat invasives are frequently introduced. Monitoring for new infestations and the result of treatment is as important as applying the treatment.

8.4.2 Vegetation Management Plan

The latest update to the Vegetation Management Plan was in 1995. Much of the vegetation management that has occurred on the project includes removal of hazard trees in the recreation area, brushing and clearing of trails and small efforts of reducing overloading of vegetation in the forest cover. The “Hazard Tree” portion of the plan is updated annually and information regarding hazard trees is provided in Appendix E.

Updating the plan would provide broad, long-term management direction for USACE lands and would set management priorities to guide the direction of vegetation management actions on USACE lands. It would be evaluated at least every 5 years and modified as needed to accommodate changing conditions and goals and to incorporate available advancements in management knowledge and techniques.

Managing for wetland functions and values is of high priority, particularly as several wetland restoration projects in the Pack River Delta and Clark Fork River Delta will provide long-term benefits. Other management priorities listed are the following:

- Emergent Wetland Habitat
- Forested Wetland Habitat
- Scrub-shrub Wetland Habitat
- Mesic and Dry-Mesic Montane Mixed Conifer Forest Habitats
- Grassland/Forb and Agriculture-Converted Dry Meadow Habitat

Habitat conditions range from unproductive mud flats exposed during the reservoir drawdown in the winter to submerged lands with rooted aquatic plants to forested uplands. Extensive bank erosion has occurred to islands and shorelines in the Clark Fork River Delta, resulting in losses of soil, native riparian and wetland vegetation, as well as the quantity and quality of fish and wildlife habitat. This erosion is the result of wave action and water level fluctuations of Lake Pend Oreille and the erosive action of flowing water in the Clark Fork River. This type of erosion is also found in the Pack River Delta, Priest River Delta and all unprotected shorelines. Both the Clark Fork River Delta and the Pack River Delta are listed as the two top mitigation priorities under the Albeni Falls Wildlife Protection, Mitigation, and Enhancement Plan (Martin et al. 1988).

At full pool, most of the WMA is classed as a shallow marsh with an average water depth of two to four feet surrounded by a narrow riparian zone of sedges (*Carex spp.*), black cottonwood and willows. Next to the riparian zone is a fringe of conifers. Prior to dam construction, much of the WMA lands consisted of extensive black cottonwood stands, scrub-shrub wetlands, marshes and seeded hay fields.

Typical aquatic vegetation includes pondweed (*Potamogeton spp.*), waterweed (*Elodea spp.*), milfoil (*Myriophyllum spp.*), and Chara. The abundance of aquatic macrophytes is limited to areas below the winter drawdown zone due to deep inundation during the growing season followed by exposure to freezing and desiccation during winter. Emergent plant species primarily include cattail, bulrush species, wool grass (*Scirpus cyperinus*), spike rush, and sedges. However, shorelines are typified by a stark contrast from poorly vegetated mudflats to dense stands of non-native, invasive reed canary grass. Shrub habitats include mountain alder, red-osier dogwood, and willows. Hardwood stands are dominated by black cottonwood, but may also include red alder and paper birch, and typically include an understory of common snowberry. Conifer

stands include Douglas-fir, grand fir, western red-cedar, western white pine, ponderosa pine, lodgepole pine (*Pinus contorta*), western hemlock (*Tsuga heterophylla*), and western larch, and are often mixed with black cottonwood. Most of the conifers occur in the Clark Fork River Delta area where some stands approach an old-growth condition.

Seventeen rare plant species have been found within the boundary of the Pend Oreille WMA, and 78 have been found within 25 miles of the boundary of the WMA (Appendix III). No known threatened or endangered plants have been found with the boundary of the WMA.

8.5 LANDS ACTIVELY MANAGED BY IDFG

Over 4,046 acres of wetlands and riparian habitat are licensed to IDFG for management and includes portions of their Pend Oreille WMA. USACE will continue to work cooperatively with IDFG to manage these lands for the benefit of fish and wildlife. Within this frame the following are recommended:

- Continue to monitor eroding banks and stabilize as determined necessary. Stabilization projects should use the best available science and be appropriately balanced taking in consideration the multiple natural resource goals.
- Remove encroachments and/or trespasses repairing damages that have occurred to habitat.
- Continue to provide wildlife-related recreational access, particularly for public hunting, fishing, and wildlife observation.
- Provide habitat for migrating and wintering waterfowl by managing vegetation including controlling noxious and invasive weeds.

8.6 LANDS ACTIVELY MANAGED BY USACE

Table 13 lists several routine O&M and small-scale actions that are recommended as development needs under this Master Plan. In addition, USACE staff identified future improvements that are also included but are not limited to the items listed in Table 13. The development needs outlined in Table 13 are those that are considered to meet the conditions and standards established under the PA and so a formal Section 106 consultation under NHPA would most likely not be required. This list is subject to change as new concerns arise, management priorities change, or new guidance is provided by USACE Headquarters. Depending on the scope of any proposed project, additional coordination under NEPA, NHPA, or ESA may be required.

Table 13. List of proposed routine O&M and small-scale projects at the AFD Project organized by management area.

Management Area	Item No.	Development Needs
Vista Recreation Area	1	Renovate irrigation system to extend and replace with pop-up heads
	2	Design and install interpretive signage
	3	Landscaping work including turf renovation and plantings
	4	Install lighting on pathway from Visitor Center to powerhouse
	5	Update interpretive exhibits, signs and displays in the powerhouse and Visitor Center
	6	Playground installation
	7	Crack seal and seal coat parking areas, access roads, and paved trail
	8	Construct storage building for equipment and materials in Natural Resources Management Maintenance
	9	Replace Maintenance Shop with updated facility.
	10	Trail installation to facilitate Pend Oreille River Passage Trail, connecting Oldtown with Sandpoint
Albeni Cove Recreation Area	1	Redesign and rehabilitate remaining campsites
	2	Replace restroom
	3	Repair trails leading to tent-only sites
	4	Finish bridge repair (railing)
	5	Repair and repave roadways
	6	Add trails and hard-surface trails for accessibility
	7	Pave boat overflow parking area
	8	Provide shade in the Volunteer Village
	9	Construct a playground
	10	Renovate picnic area for accessibility
	11	Construct interpretive amphitheater
	12	Stabilize beach from further erosion
	13	Install irrigation in Volunteer Village
	14	Install potable water spigots for filling camping trailers
Northshore Strips WMA	1	Bank stabilization
Strong's Island WMA	1	Bank stabilization
Priest River Recreation Area	1	Redesign and rehabilitate campsites
	2	Replace playground
	3	Renovate sports field
	4	Repair and repave roads and trails
	5	Add and hard-surface trails for accessibility

Management Area	Item No.	Development Needs
	6	Renovate picnic area for accessibility
	7	Replace pumphouse
	8	Replace restrooms
	9	Pave boat overflow parking area
	10	Install concrete sidewalks to and around the beach restroom to support accessibility and turf damage
	11	Replace restroom buildings
	12	Install hookups for campsites (water/power/sewer)
	13	Install potable water spigots for filling camping trailers
	14	Replace floating courtesy dock with a fixed pier dock
	15	Renovate irrigation system
Priest River WMA	1	Bank stabilization
Carry Creek WMA	1	Bank stabilization
	2	Addressing invasive and noxious weeds
Riley Creek Recreation Area	1	Repair of tree-heaved access roads and trails
	2	Replace playground equipment
	3	Addition of shade shelters at the beach
	4	Replacement of dump station and drain field
	5	Replace restroom buildings
	6	Dredging of the boat basin during low water would ensure safe navigation
	7	Installation of new park benches
	8	Addition of interpretive signage highlighting the historical and ever-present tribal significance of the area
Hoodoo Creek WMA	1	Explore opportunities to improve boating access to the Pend Oreille River by improving road, parking lot, and installing a boat ramp
	2	Addition of interpretive signage highlighting the historical and ever-present tribal significance of the area
Morton Slough WMA	1	Continued maintenance of the gravel parking lot
Carr Creek WMA	1	Potential bank stabilization due to erosion
Spring Point Recreation Area	1	Redesign and rehabilitate campsites
	2	Repair and repave roads and trails
	3	Add and harden surface trails for accessibility
	4	Renovate picnic area for accessibility
	5	Repair trail due to erosion on the southwest corner of the property
	6	Install fencing to delineate boundary on west line

Management Area	Item No.	Development Needs
	7	Bank stabilization to protect the north end of the property
Pack River Delta WMA	1	Control of aquatic invasive weeds
Trestle Creek Recreation Area	1	Install, replace, or maintain fencing
	2	Place boulders on lawn/road edge to manage vehicle access
	3	Repair and repave roads and trails
	4	Replace restroom
	5	Rehabilitate beach
	6	Add and maintain hard-surface trails for accessibility
	7	Renovate picnic area for accessibility
	8	Bank stabilization from beach to gage well
	9	Install potable water
	10	Install a park attendant site
Clark Fork River Delta WMA	1	Bank stabilization
	2	Controlling aquatic and terrestrial invasive/noxious weeds

Some of the development needs identified in section 5 and outlined in Table 13 are those that may be considered to meet the conditions and standards established under Attachment 6 of the SWPA) for a categorical routine activity. Still, AFD staff must coordinate with the Project Archaeologist prior to implementing any development need as it will be the Project Archaeologist who is responsible for ensuring that the project adheres to the policies and procedures outlined in the three primary legal agreements – the HPMP, the SWPA, and 36 CFR §800. Depending on the scope of any proposed project, additional coordination under NEPA, NHPA, or ESA may be required.

In addition, best management practices that are recommended to reduce impacts on the environment while implementing routine O&M and small-scale actions are listed in Appendix D. Also, the following are in-water work windows to avoid and minimize adverse impacts to ESA-listed fish:

- a. In rivers and streams, foraging, migrating, and overwintering (FMO) habitat in-channel disturbance is limited to the period between July 15 and August 31, except for projects incorporating dormant woody vegetation where species presence has been adequately evaluated. Spawning and rearing (SR) habitat in-channel disturbance is limited to the period between July 15 and August 15.
- b. In lake or lake-influenced settings, such as Lake Pend Oreille, work may be conducted in the dry during the lake drawdown period.
- c. In regard to constructing fish passage in the future, USFWS has been in contact

with USACE staff, and have granted extensions to the aforementioned in-water work windows to accommodate for tight construction windows.

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10 APPENDICES

Appendix A - Design Memorandums, National Environmental Policy Act (NEPA)
Documents and Studies

Appendix B – Invasive Species

Appendix C – Threatened and Endangered Wildlife Species and Other Species of
Concern

Appendix D – Best Management Practices

Appendix E – Hazard Trees

Appendix F – Pertinent Public Laws, Policies, and Procedures

Appendix G – Seaplane Operations at Civil Works Water Resource Development Projects

Appendix A

DESIGN MEMORANDUMS, NATIONAL ENVIRONMENTAL POLICY
ACT (NEPA) DOCUMENTS AND STUDIES

Design Memorandums

Following is a list of previously issued Design Memorandums for Albeni Falls Dam and Reservoir.

No. Design Memo	Subject		Date Issued
1	Housing Facilities		August 1950
2	Powerhouse Cost Study		November 1950
3	Turbine & Governor Design		November 1950
4	Model Gate Test and Gate Revisions		December 1950
5	Concrete Aggregate Investigation		January 1951
6	Third Avenue Fill for Mosquito Control, Sandpoint, Idaho		July 1951
7	Protection of County Roads, Bonner County, Idaho		December 1951
8	Shore protection – Sandpoint, Idaho		January 1952
9	Screens for Powerhouse Intake Gate Wells		February 1953
10	Readjustment of City of Sandpoint Water Lines		February 1953
11	Reservoir Drift Control		February 1954
	Supplements to No. 11		
	1	Results of 1954 Drift Removal, Experiments and Recommendations for Future Operation	November 1954
	2	Results of 1955 Drift Control Operation and Recommendations for Facility Improvements	August 1955
	3	Revision of Drift Storage Booms at Site “C”	August 1955
12	Cost Allocation		February 1957
13	Site Development		November 1954
14	Effect of Albeni Falls Dam on Kokanee Fishery		November 1955
	Supplement 1 to No. 14	Settlement of Kootenai Fishery Problem	May 1957
15	Alleviation of Erosion Damage		September 1956
	Supplements to No. 15		
	1	Alleviation of Erosion Damage	October 1958
	2	Alleviation of Erosion Damage	December 1958
	3	Alleviation of Erosion Damage	February 1960
	4	Alleviation of Erosion Damage	February 1963
	5	Alleviation of Erosion Damage	April 1963
16	Additional Easements		May 1957
	Supplements to No. 16		
	1	Additional Easements	October 1960
	2	Additional Easements	April 1963
	3	Additional Easements	February 1963
17	Report on Groundwater Investigation at the Town of Clark Fork, Idaho		October 1957

No. Design Memo	Subject		Date Issued
	Supplement 1 to No. 17	Report on Groundwater at the Town of Clark Fork, Idaho	October 1960
18	Public Access Facilities		April 1958
19	Relocation Bonner County Dock Road, Lakeview, Idaho		June 1958
20	Plan for Sedimentation Observation		January 1959
21	Public Access Facilities at Springy Point		November 1960
22	Public Access Facilities at Riley Creek		August 1962
23A	Preliminary Master Plan		May 1964
23B	The Master Plan for Development and Management of Reservoir Lands		January 1965
24	Additional Land Requirements – Public Recreation Areas		May 1964
25	Albeni Falls Project Master Plan		June 1981
26	No document found		
27	No document found		
28	Operation and Maintenance, Cultural Resources Management Plan: Evaluation of Resources		April 1994
end 1999 (this index system was no longer used)			

NEPA Documents

Following is a list of prior NEPA documents for Albeni Falls Dam and Reservoir

EA – Environmental Assessment

EIS – Environmental Impact Statement

DATE	SUBJECT
1974	Albeni Falls Dam and Reservoir EA
1976	Clark Fork Debris Facility Rehabilitation EA
1976	Springy Point Recreation Improvements EA
1977	Bank Protection EA near Burlington Northern Railroad
1983	Albeni Falls Operation EIS
1984	Clark Fork Debris Facility Rehabilitation EA
1987	Priest River and Riley Creek Recreation Areas Retaining Wall Construction EA
1987	Clark Fork Drift Facility Rehabilitation EA
1995	Albeni Falls Dam Kokanee Operations EA
2003	Riley Creek Campground Improvements EA
2005	Pend Oreille River Shoreline Stabilization EA, Priest River Wildlife Management Area (WMA)
2005	Sandpoint Bank Stabilization EA

DATE	SUBJECT
2006	Albeni Falls Bank Protection EA
2006	Carr, Hornby, and Priest River WMAs Shoreline Stabilization EA
2007	Milfoil Eradication Pilot Project EA
2008	Albeni Cove Recreation Area Shoreline Stabilization EA
2011	Albeni Falls Dam Flexible Winter Power Operations EA
2012	Hoodoo Creek Bank Stabilization EA
2015	Pend Oreille River Shoreline Stabilization Project EA, Priest River WMA Phase 3
2016	Clark Fork Drift Facility 10-year Maintenance EA
2016	Riley Creek Recreation Area Shoreline Stabilization Project EA
2018	Carey Creek Shoreline Stabilization EA
2018	Albeni Falls Dam Master Plan EA
2020	Albeni Falls Dam Strong's Island Cultural Site Protection Project EA
2023	Albeni Falls Dam 10-Year Program to Control Invasive Aquatic Weeds and Continue Studies in Aquatic Weed Control
2025	Supplemental Information Report to the Environmental Assessment for the Albeni Falls Dam Clark Fork Drift Facility 10-Year Maintenance and Repair

Studies

DATE	SUBJECT
1979	Debris Facility Study
1979	Lake Pend Oreille Wetlands Study (Volume 1 and 2)
2001	Clark Fork Driftyard Work Pad and Breakwater No. 3 Project
2002	Albeni Falls Grave Protection Project
2015	Bird Surveys on U.S. Army Corps of Engineers Properties near Albeni Falls Dam, Bonner County, Idaho
2017	Albeni Falls Herpetology Inventory Report
2018	Albeni Falls Bat Survey Report

Appendix B

INVASIVE SPECIES

Introduction

The purpose of this appendix is to provide background information on invasive species found on USACE lands and summarize the efforts to treat and control these species. Historically, the detection, control, and treatment of aquatic invasive plants has been a focus at the Albeni Falls Dam (AFD) Project. However, terrestrial noxious weeds and an invasive grass now dominate wildlife habitat cover types on U.S. Army Corps of Engineers (USACE) lands and greater attention is required for the detection, control, and treatment of the terrestrial invasive weeds. It is expected that this appendix will require updating over time as new infestations are detected, treated, and monitored.

Invasive species pose a serious threat to native aquatic and terrestrial plant communities and are an important contributor to loss of biodiversity. The economic impact of invasive species in the U.S. is estimated at \$21 billion dollars annually (Fantle-Lepczyk et al. 2022). Invasive species have had and will continue to have large impacts on native species and community structures and will continue to dramatically alter ecosystem processes. Without control, invasive species could interfere with USACE's stewardship mission, damage real property, increase maintenance costs, and potentially expose project personnel to diseases.

Not all invasive plants are noxious weeds. "Noxious" is a legal description for certain invasive weeds found throughout the State of Idaho. In Idaho, a noxious weed is determined by a weed's potential threat to the environment and economics of crop production. The Idaho Noxious Weed Law (Idaho Statute Title 22, Chapter 24) requires landowners to eradicate noxious weeds on their land. Legally, eradication means the elimination of a noxious weed based on the observation that the weed is no longer in the area during the growing season. As required by the Idaho Noxious Weed Law, each county is to provide the public a general notice containing a list of noxious weeds. The Bonner County Weed Superintendent annually updates the list of noxious weeds into the following five categories: Early Detection Rapid Response (EDRR), Watch List, Control List, Containment list, and the Bonner County Invasive Weeds of Concern. Table 1 below provides the 2024 list of categorized noxious weeds in Bonner County. Reed canary grass (*Phalaris arundinacea*), an invasive weed on USACE lands, is not on the Bonner County noxious weed list as this grass is still used as pasture grass in agriculture. Regardless, reed canarygrass now dominates the wildlife habitat cover types on USACE lands and is need of control. For this reason, this appendix will provide a description of the weed's biology, ecological impacts, and history of attempted treatments to aid managers in developing controls methods.

Invasive species are best controlled with an integrated pest management (IPM) approach. IPM uses a multitude of methods to manage populations thru cultural, mechanical, biological, and chemical means. Different species require different removal methods across the landscape to be effective. This supports why a land manager's extensive knowledge of the problem species life history and habit can greatly benefit the successful control of the target species. The Idaho State Department of Agriculture (ISDA) provides training and certification on management of

noxious/invasive species through professional pesticide applicator licenses. Although it is not required to obtain a professional pesticide applicators license by USACE per State of Idaho to apply non-restricted chemicals, it is good practice to learn the knowledge and abilities taught in these courses for safe and effective control of noxious/invasive species. Further explanation and understanding of noxious/invasive species management at AFD can be found in the Pest Management Plan.

Table 1. Categorized noxious weeds in Bonner County and brief comments on their reproductive biology (source: <https://www.bonnercountyid.gov/noxious-weeds>). This table is for the weeds reported in 2024 and is annually updated by the County.

Noxious Weed	Category	Comments
Aquatic Plants		
Curlyleaf Pondweed (<i>Potamogeton crispus</i>)	Containment List ¹	Submersed, aquatic perennial herb with thick rhizomes. Reproduces by vegetative shoots called turions.
Eurasian Watermilfoil (<i>Myriophyllum spicatum</i>)	Containment List	Submersed, aquatic perennial that flowers twice a year.
Flowering Rush (<i>Butomus umbellatus</i>)	Containment List	Aquatic perennial that grows 1-4 feet high along shorelines, as well as in deep water (30 feet) as a submerged form that does not produce flowers.
Terrestrial Plants		
Absinth Wormwood (<i>Artemisia absinthium</i>)	Weed of Concern ²	Perennial forb that spreads by both seed and rhizomes. Thrives in moist environments.
Bohemian Knotweed (<i>Polygonum bohemicum</i>)	EDRR ³	Perennial with large leaves, hollow stems, and log creeping rhizomes.
Buffalobur (<i>Solanum rostratum</i>)	Watch List ⁴	Annual with spiny leaves, flowers, and stems.
Bull Thistle (<i>Cirsium vulgare</i>)	Weed of Concern	Biennial, and sometimes annual or monocarpic perennial with a tap root up to 29 inches long. Prefers disturbed areas.
Canada Thistle (<i>Cirsium arvense</i>)	Containment List	Perennial reproducing by creeping, freely sprouting horizontal roots and by seed. Occurs in moister areas.
Cogon Grass (<i>Imperata cylindrica</i>)	No category provided	Perennial grass; forms dense ground-level mats, with scaly rhizomes below ground.
Common Reed (<i>Phragmites australis</i>)	EDRR	Perennial grass with creeping rhizomes. Found in moist areas. Also known as phragmites.
Common Tansy (<i>Tanacetum vulgare</i>)	Weed of Concern	Perennial; most often found in disturbed, dry soils growing in full sun. Aromatic foliage and rhizomes.

Noxious Weed	Category	Comments
Dalmatian Toadflax (<i>Linaria dalmatica</i>)	Containment List	Perennial; reproduces by seed and rhizomatous roots. Seeds can remain dormant in the soil for up to 10 years.
Diffuse Knapweed (<i>Centaurea diffusa</i>)	Control List ⁵	Biennial with a deep taproot. Reproduces and spreads from seed.
Field Bindweed (<i>Convolvulus arvensis</i>)	Control List	Perennial from a deep-seated tap root (10 feet) that can give rise to numerous underground rhizomes.
Giant Knotweed (<i>Polygonum sachalinense</i>)	No category provided	Perennial with rhizomes that can grow 9-20 feet in height and resembles bamboo.
Hare's-foot Clover (<i>Trifolium arvense</i>)	Weed of Concern	An annual or biannual in the legume family that reproduces by seed. Prefers dry grassland areas and sandy soils.
Hoary Alyssum (<i>Berteroa incana</i>)	Control List	Annual biennial or short-lived perennial that reproduces by seed. Adapted to dry conditions on sandy or gravelly soils.
Hoary Cress (White Top) (<i>Cardaria draba</i>)	Watch List	Perennial, growing from extensive, coarse underground rhizomes. Thrives in saline soils.
Houndstongue (<i>Cynoglossum officinale</i>)	Control List	Biennial to short-lived perennial that spreads by seed. Usually found in pastures, along roadsides, and disturbed habitats.
Japanese Knotweed (<i>Fallopia japonica</i>)	No category provided	Perennial; a broad-leaved plant with rhizomes.
Jointed Goatgrass (<i>Aegilops cylindrica</i>)	Watch List	Winter annual; flowering and seed production occur from June to August. Can hybridize with wheat.
Kochia (<i>Bassia scoparia</i>)	Weed of Concern	Summer annual; highly variable in color and form and high seed production.
Leafy Spurge (<i>Euphorbia esula</i>)	EDRR	Creeping perennial that reproduces from seed and rhizomes.
Orange Hawkweed (and Yellow) (<i>Hieracium aurantiacum</i>)	Containment List	Perennial plant with fibrous roots and rhizomes. Prefers full sun or partial shade and well-drained, sandy soils.
Oxeye Daisy (<i>Leucanthemum vulgare</i>)	Containment List	Perennial herbaceous plant that reproduces by seed and rhizomes.
Perennial Pepperweed (<i>Lepidium latifolium</i>)	Control List	Perennial broad-leaved plant that reproduces by seed and creeping rhizomes. Invades riparian areas, wetlands.
Perennial Sowthistle (<i>Sonchus arvensis</i>)	Control List	Perennial herb that reproduces by seed and rhizomes. Grows in a variety of habitats.
Poison Hemlock (<i>Conium maculatum</i>)	Watch List	Biennial plant that germinates from seed throughout the year.

Noxious Weed	Category	Comments
Policeman's Helmet (<i>Impatiens glandulife</i>)	No category	Succulent annual with shallow roots that reproduces by seed. Each plant can produce up to 800 seeds and eject the seeds over 20 feet from capsule.
Puncturevine (<i>Tribulus terrestris</i>)	Watch List	A summer annual that is prostrate that reproduces by seed.
Purple Loosestrife (<i>Lythrum salicaria</i>)	Control List	Perennial plant that can grow in water and dry soils. The plant can produce as many as 2 million seeds in one growing season.
Rush Skeletonweed (<i>Chondrilla juncea</i>)	Control List	Deep-rooted (up to 7 feet) perennial that reproduces by seed and root fragments in the soil.
Saltcedar (Tamarisk) (<i>Tamarix ramosissima</i>)	EDRR	Perennial shrub-like tree that produces seeds throughout the growing season.
Scotch Broom (<i>Cytisus scoparius</i>)	EDRR	Perennial evergreen shrub that reproduces by seed and can thrive on poor, dry, sandy soils.
Scotch Thistle (<i>Onopordum acanthium</i>)	EDRR	Biennial that can produce up to 20,000 seeds in a growing season.
Small Bugloss (<i>Anchusa arvensis</i>)	EDRR	Annual plant that reproduces by seed
St. Johnswort (<i>Hypericum perforatum</i>)	Weed of Concern	Perennial plant that reproduces by seed and rhizomes. One plant can produce up to 23,000 seeds.
Spotted Cat's Ear (<i>Hypochaeris radicata</i>)	Weed of Concern	Perennial with a long tap root that reproduces by seed.
Spotted Knapweed (<i>Centaurea stoebe</i>)	Containment List	Perennial that reproduces by seed that can remain viable in the soil for up to 8 years. Likes disturbed areas.
Tansy Ragwort (<i>Senecio jacobaea</i>)	EDRR	Biennial, short-lived perennial, or winter annual herb. Flowers in its second year.
Viper's Bugloss (also called Blueweed) (<i>Echium vulgare</i>)	Watch List	Annul or biennial plant that reproduces by seed. Likes disturbed areas.
White Byrny (<i>Bryonia alba</i>)	No category provided	Perennial herbaceous vine that reproduces by seed. Plants can also resprout from the roots.
Yellow Flag Iris (<i>Iris pseudacorus</i>)	EDRR	Perennial plant that reproduces by seed and spreads by rhizomes. Prefers wet habitats.
Yellow Starthistle (<i>Centaurea solstitialis</i>)	Watch List	Annual that reproduces entirely by seed.
Yellow Toadflax (<i>Linaria vulgaris</i>)	Containment List	Perennial that reproduces by seed (up to 30,000 seeds annually) and vegetatively. Seed viability

Noxious Weed	Category	Comments
		is low and so the plant relies on vegetative reproduction to spread and persist.
¹ Containment list – widespread infestations; long term management goals aimed at maintaining high use areas and travel corridors to reduce further spread, and to abate populations for resource protection EDRR list – infest limited acreage across the county; some on only one site. Eradication is the goal ² Bonner County Invasive Weeds of Concern; in addition to the state noxious weeds list, these are listed at the local level. Infestation levels vary, but most are widespread and fall under Containment management objectives. ³ EDRR list – infest limited acreage across the county; some on only one site. Eradication is the goal. ⁴ Watch list – Idaho noxious weeds that do not have a confirmed presence in Bonner County but are confirmed in surrounding areas of the region. Prevention is the goal. Would be treated as high priority EDRR if infestation is confirmed. ⁵ Control list – moderate infestation levels; the goal is to suppress populations, prevent spread and possibly eradicate site specific pioneering colonies.		

Aquatic Invasive Plants

Plant species such as Eurasian watermilfoil (*Myriophyllum spicatum*) and flowering rush (*Butomus umbellatus*) are examples of nonnative aquatic plants that have spread widely into palustrine systems throughout the Pend Oreille subbasin. These plants out-compete native aquatic plants, potentially transforming the fundamental ecological structures and functions of the ecosystem. Invasive plants typically grow and senesce more quickly and widely than native plants, which can lead to impaired hydrology and water quality. Their spread can also have negative consequences for recreational opportunities.

Controlling aquatic invasive vegetation can involve several approaches. Mechanical control includes harvesting and cutting to physically remove or reduce plant biomass, however, many aquatic invasive plants depend on disturbance (fragmentation) as a spreading mechanism. Chemical control employs herbicides that optimally target invasive species, though care in application is necessary to protect native flora and water quality. Biological control may involve introducing natural predators (e.g. grass carp) that may suppress growth and spread, however, may be ineffective at larger scales or inappropriate to the ecosystem's food web.

Eurasian Watermilfoil

In 1998, Eurasian watermilfoil was identified in the river upstream of AFD. Pockets were found near the Albeni Cove and Strong's Island management areas, and along the shoreline to the Priest River management area. Herbicidal and mechanical treatments were attempted in 1998 through 2009 with limited degrees of success. This species is killed by freezing temperatures (72 or more hours), so colonies are prevented from becoming established in areas exposed during winter drawdown (between 2,062 and 2,051 feet MSL). However, additional investigations are ongoing to determine the best methods to control milfoil above the dam.

Eurasian watermilfoil is a perennial, monoecious (i.e., male and female flowers are found on the same plant) submerged plant that flowers twice a year, usually in mid-June and late-July. Although the plant produces flowers, it spreads primarily by vegetation fragmentation, such that a fragment can break off, settle in the sediment, grow roots, and establish a new plant. The plant dies back in the fall, but the root system can survive the winter and begin growing again in

the spring. The plant can grow up to 20 feet tall, but typically only grows 3-9 feet tall. Watermilfoil grows early and elongates rapidly, creating a canopy on the water's surface and giving the plant a competitive advantage over the native aquatic species (Valley and Newman 1998).

History of Eurasian Watermilfoil Treatment

As part of the ongoing operations and maintenance of the AFD, USACE has worked cooperatively with the Bonner County Weed Control Board and the State of Idaho over the last 23 years to control milfoil on Federal lands. Typically, the ISDA or Bonner County obtain and apply the milfoil treatment on project lands. Initial treatment on USACE property by the County using Triclopyr began in 1998. The treatments were applied in 1998, and again in 1999, and were experimental in nature. These treatments proved successful at the locations where treatment occurred. Consequently, in 2004, Bonner County Public Works Noxious Weed Control Section developed a 5-year plan, and USACE prepared a biological assessment for the use of Renovate (Triclopyr) and Sonar (fluridone) to control watermilfoil. In 2007, an additional biological assessment was prepared for the use of bottom barriers in an attempt to control watermilfoil in the project area. In 2012 and 2018, USACE received concurrence from the U.S. Fish and Wildlife Service to conduct 5-year treatment plans. In addition to the 5-year treatment plans, research on treatment methods as well as chemical combinations continued. Table 2 provides a chronological history for Eurasian milfoil control on USACE property in Lake Pend Oreille.

Table 2. Eurasian Watermilfoil treatments on USACE lands.

Year	Treatment location, Area of treatment, and Type of treatment
1998	12 acres treated: <ul style="list-style-type: none"> • Northshore Strips WMA: 2 acres treated with Aquathall (endothall) • Albeni Cove: 8 acres treated with Reward (diquat) • Strong's Island WMA: 2 acres treated with Reward (diquat)
1999	15 acres treated, of that 8 acres were on USACE lands: <ul style="list-style-type: none"> • Albeni Cove: 15-acre portion, 8 of which were USACE lands, 7 were State land, treated with Renovate (Triclopyr)
2000 – 2004	No chemical treatments on USACE lands
2005	60 acres of treated at Albeni Cove, Priest River, Riley and Springy Point with Renovate (Triclopyr)

Year	Treatment location, Area of treatment, and Type of treatment
2006	1,046 acres of USACE Lands Treated – two different treatment methods: <ul style="list-style-type: none"> • 761 acres, multiple treatments, using Sonar (fluridone) on Albeni Cove Recreation Area; and Priest River, Morton Slough, Oden Bay, and Pack River WMAs. • 285 acres treated with Renovate (Triclopyr) on Clark Fork, Riley Creek, Carey Creek, Mallard Bay, Hornby Creek, Carr Creek, Northshore Strips, and Strong's Island WMAs.
2007	574 acres of USACE lands treated: <ul style="list-style-type: none"> • 188 acres treated with Renovate OTF (Triclopyr) on Strong Island, Carey Creek, Morton Slough, Oden Bay, and Clark Fork WMAs; and Priest River Rec, Area, • 316 acres treated with Sonar (fluridone) on Hoodoo Creek, Riley Creek, and Pack River WMAs • Approximately 70 acres of the Morton Slough WMA acreage were inadvertently treated with 2, 4-D with coordination occurring post treatment.
2008	724.2 acres treated with Renovate (Triclopyr): <ul style="list-style-type: none"> • Clark Fork, Pack River, Oden Bay, Hornby Creek, Morton Slough, Hoodoo Creek, Carey Creek, Priest River, and Strong Island WMAs • Springy Point, Riley Creek, and Albeni Cove Recreation Areas
2009	55.21 acres treated on Corp lands. All were treated with Renovate (Triclopyr): <ul style="list-style-type: none"> • Albeni Cove and Vista Rec Areas • Northshore Strips, Strong's Island, Priest River, Carr Creek, Riley Creek, Hoodoo Creek, Morton Slough, Mallard Bay, Springy Point, Oden Bay, Pack River, and Clark Fork WMAs.
2010	No treatments on USACE lands
2012	40 acres treated with Renovate (Triclopyr) on Morton Slough WMA.
2013 – 2016	No milfoil treatments conducted
2018	5 acres treated with ProcellaCOR in Morton Slough WMA

In August 2018, a demonstration treatment of ProcellaCOR® EC Aquatic Herbicide (a.i., florypyrauxifen-benzyl) for selective control of Eurasian watermilfoil was cooperatively conducted in Morton Slough WMA (Figure 1) by ERDC, U.S. Department of Agriculture, and ISDA. In Figure 1, blue triangles are water sampling stations and the red/yellow grid intersection points were locations for rake sampling of vegetation. Analytical monitoring confirmed fast ProcellaCOR dissipation on the day of application with <1 µg a.i. L-1 measured at 9 hours following treatment. Prior to application, milfoil in the Morton Slough WMA was found at 95% frequency of occurrence with moderate to high densities of growth. At 6 weeks post treatment,

the frequency decreased to 2% with just trace remaining plant biomass of questionable viability. Elodea and coontail (*Ceratophyllum demersum*) were dominant native plants after treatment. As anticipated with the herbicide, northern watermilfoil (*Myriophyllum exalbescens*) decreased in the management area following treatment. The ProcellaCOR application was highly selective in control of Eurasian watermilfoil with native species richness in the Morton Slough WMA site increasing from seven native species to eight native species following treatment. There were some signs of normal seasonal senescence for species such as small pondweed (*Potamogeton pusillus*) that also occurred in the Riley Creek WMA untreated reference. Eurasian watermilfoil maintained high densities in the Riley Creek WMA reference site at six weeks post application confirming the treatment effect associated with the ProcellaCOR application to the Morton Slough WMA (Figure 2). At 58-weeks after August 2018 application, Eurasian watermilfoil control continued with only trace densities found at 7% of sampled locations (again compared to 95% pre-treatment frequency). Elodea and coontail remained dominant native species, and northern watermilfoil showed favorable increase in frequency back to levels statistically the same as before ProcellaCOR application (Getsinger and Heilman 2021).

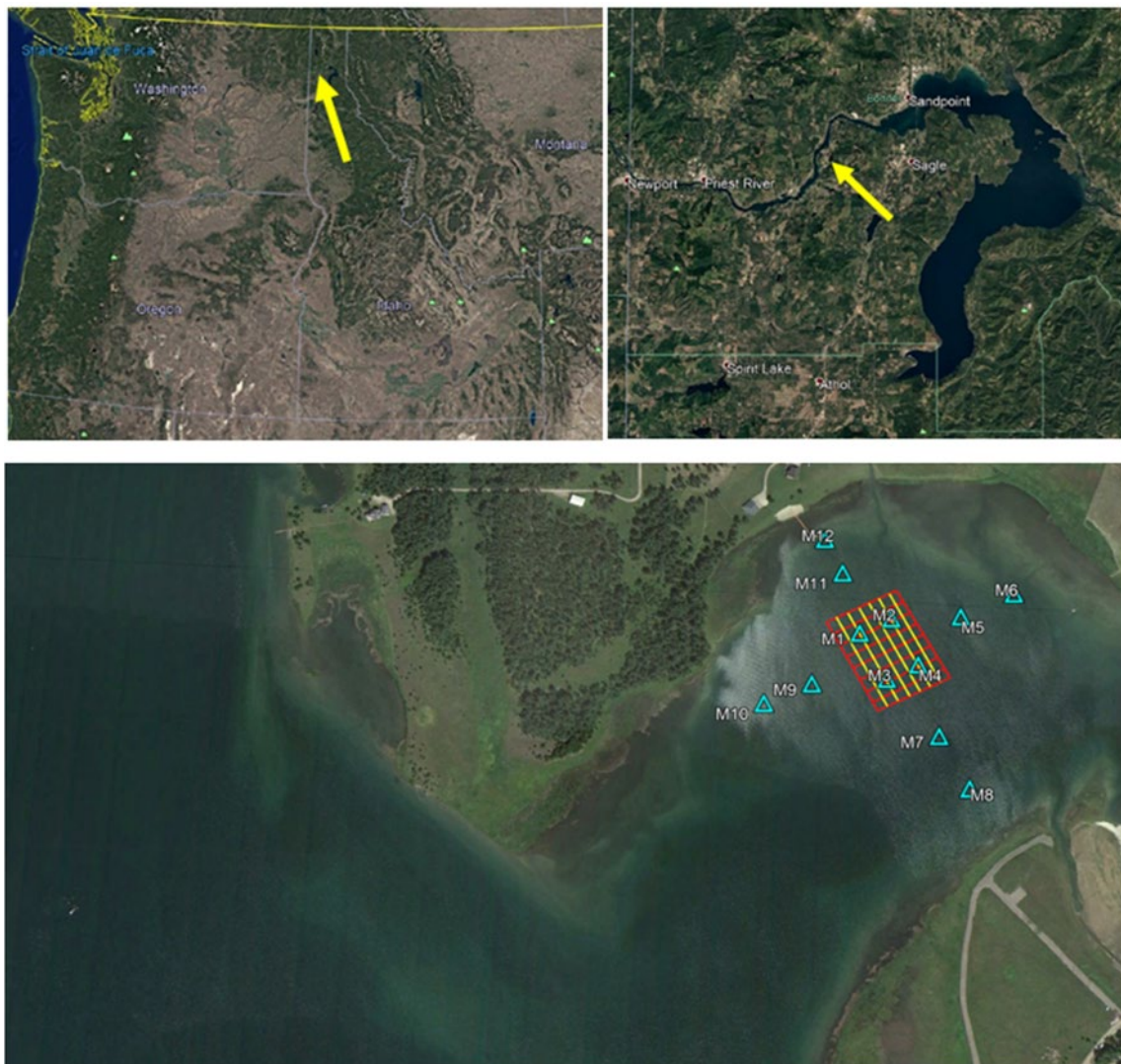


Figure 1. Morton Slough WMA study site location and layout.



Figure 2. Photos of Elodea, non-viable Eurasian watermilfoil, and coontail at the 6-week assessment of Morton Slough WMA study site.

Flowering Rush

In 2007, flowering rush (*Butomus umbellatus*) was discovered in Lake Pend Oreille at the Clark Fork Drift Yard and Johnson Creek management areas. The initial infestation covered about 10 acres, but by 2014, the plant was found throughout the lake and Pend Oreille River and had passed through AFD to areas further downstream.

B. umbellatus is a perennial monocot native to Eurasia. It was first recorded in North America in 1897 and became established in the northeastern United States by the early 1900s (Core 1941; Bellaud 2009). Currently, it is found in all states bordering Canada and the Great Lakes, with documented occurrences in Connecticut, Iowa, Massachusetts, Nebraska, Oregon, and South Dakota (Cao, Berent, and Fusaro 2018).

Flowering rush exhibits a remarkable ability to thrive in northern lakes and rivers, flourishing in the littoral zones of both calm and flowing water systems. It can grow as an emergent plant along shorelines or as a submerged plant in deeper waters (up to 6 meters), and sometimes in both forms (Countryman 1970; Madsen, Wersal, and Marko 2016). Once established, flowering rush can form dense monotypic stands that outcompete desirable native vegetation, restrict recreational water use, impede water flow, and adversely affect native fish species (Boutwell 1990).

A particular concern is its potential impact on salmonid species, as dense stands of flowering rush may obstruct key migration routes in tributary waters. Additionally, these stands may provide ambush cover for predators such as northern pikeminnow (*Ptychocheilus oregonensis*)

and northern pike (*Esox lucius*), which prey on juvenile salmonids. Research indicates that northern pike have contributed significantly to the decline of cutthroat (*Oncorhynchus clarki*) and bull trout (*Salvelinus confluentus*) in the Flathead River, Montana (Muhlfeld et al. 2008).

History of Flowering Rush Treatment

Starting in 2011, AFD, the USACE's Environmental Research and Development Center (ERDC), and the State of Idaho started conducting experiments of various treatment methods on flowering rush in Lake Pend Oreille as well as research in controlled laboratory environments. Treatment methods, presented in chronologic order in Table 3, included both chemical and physical. Early results of the herbicide effectiveness at the ERDC laboratory revealed that the maximum concentration of flumioxazin combined with endothall for exposure time of 24 hours demonstrated positive results by reducing shoot and root biomass by 82 to 90%. Results of experiments at Mississippi State University showed that Fluridone and Triclopyr were effective at reducing plant foliage twelve weeks after treatment and belowground biomass by 24 weeks after treatment (Poovey et al. 2012 and 2013, Wersal et al. 2014).

In 2015, ERDC conducted herbicide trials on dry land prior to re-flooding of the littoral zone. Five different treatment methods were used in plots of 0.25 acres each (see Table 3 for herbicide combinations). Researchers found that only Imazapyr-treated plots had a significant reduction in rhizome bud density, but not until two years after treatment (YAT). Rhizome and root biomass exhibited significant reduction in plots treated with Imazamox and Imazapyr at one and two years after treatment, but not other treatments. Mid-summer cover was significantly lower in Imazamox and Imazapyr treated plots at 1 YAT, but not 2 YAT. The researcher's conclusion was that more than one bare-ground application is required for acceptable control (Madsen et al. 2016).

In 2016, field trials evaluated diquat dibromide formulated as the product Reward, for controlling submersed flowering rush. A 10-acre (4-ha) plot in Oden Bay was treated with diquat at a rate of 18.7 L/ha in late summer 2016 and again in 2017 using a subsurface injection method by boat. Water exchange processes were measured in treated plots in 2017 with rhodamine WT dye tank mixed with the herbicide. Flowering rush shoots were reduced by 87% in 2016 and 29% in 2017. No adverse impacts were measured on water quality (temperature, dissolved oxygen, pH, conductivity). The conclusion is that diquat should be added to the project's operational management strategy for controlling flowering rush in Lake Pend Oreille. From 2018 to present, there haven't been treatments for flowering rush on USACE lands. This was due in part to restrictions related to the COVID pandemic.

Table 3. Flowering rush treatments on USACE lands.

Year	Treatment location, area of treatment, and type of treatment
2010	<p>0.16 Acre at Clark Fork Wildlife Management Area (WMA):</p> <ul style="list-style-type: none"> • 0.04 acres treated with Renovate (Triclopyr) bare ground • 0.04 acres treated with Sonar (Fluridone) bare ground • 0.08 acres covered by benthic barriers <p>Clearance for this project was given in April 2009; however, water was inundating the plots intended to treat, the project wasn't started until Spring 2010.</p>
2011	<p>0.15 acres at Clark Fork WMA:</p> <ul style="list-style-type: none"> • 0.009 acres treated bare ground with Sonar (Fluridone), • 0.009 acres treated bare ground with Renovate (Triclopyr), • 0.009 acres treated bare ground with Clearcast (Imazamox), • 0.009 acres treated bare ground with Habitat (Imazapyr), and • 0.009 acres treated bare ground with acetic acid, experiment by ISDA • 0.05 acres covered by benthic barriers
2012	The proposed flowering rush work included in the 2012 BE did not occur.
2013	<p>0.04 acres at Clark Fork WMA:</p> <ul style="list-style-type: none"> • 0.006 acres treated bare ground with Fluridone • 0.006 acres treated bare ground with Triclopyr • 0.006 acres treated bare ground with Imazamox • 0.006 acres treated bare ground with Imazapyr • 0.004 acres treated bare ground with Fluridone and benthic barriers • 0.004 acres treated bare ground with Imazapyr and benthic barriers • 0.004 acres treated bare ground with Triclopyr and benthic barriers <p>10 acres at Clark Fork Drift Yard</p> <ul style="list-style-type: none"> • 10 acres in-water treatment with Triclopyr and Fluridone
2014	no treatments
2015	<p>5 acres at Clark Fork Drift Yard treated via different methods:</p> <ol style="list-style-type: none"> 1. Imazapyr (3 qt/ac polaris) + surfactant (1 qt/ac agri-dex) 2. Imazamox (2 qt/ac clearcast) + surfactant 3. Imazapyr (3 qt/ac polaris) + 2,4-D (1 qt/ac weedar 64) + surfactant 4. Imazamox (2 qt/ac clearcast) + 2,4-D (1 qt/ac weedar 64) + surfactant 5. untreated control (reference) <p>The proposed in-water treatment of flowering rush at Oden Bay included in the 2015 Biological Evaluation did not occur.</p>
2016	<p>0.005 acres at Clark Fork Drift Yard via two methods (+ a control)</p> <ol style="list-style-type: none"> 1. Acetic acid tapioca pearls with bottom barriers (600 sq ft.) 2. Bottom barriers only 3. Untreated (control) reference <p>10 acres at Oden Bay treated with diquat</p>

Year	Treatment location, area of treatment, and type of treatment
2017	24 acres treated: <ul style="list-style-type: none"> • Oden Bay WMA: 10 acres treated in-water to research efficacy using diquat • Clark Fork WMA: 14 acres treated in-water to research efficacy using diquat had to reduce original treatment area due to inaccessibility from log jams.

Aquatic Invasive Invertebrates

Clams

In 2012, Asian clams (*Corbicula fluminea*) were found in Ellisport Bay (near the town of Hope). Although this species can biofoul (growing rapidly to the point of clogging) water systems, the species can also compete with native species for resources. This species lives in the muddy substrates and does not adhere to surfaces the way other mussels do, although they can travel in mud stuck to boats or in boats' water wells. No occurrence of Asian clams has been reported on USACE lands.

The Asian Clam is hermaphroditic, which means both sexes are found in the same organism, allowing the clam to self-fertilize and reproduce quickly. Larvae grow in the gills of the parent clam and are released about 4-5 days later into the water as free-swimming, microscopic organisms called veligers (or pediveligers). Clams reach maturity at about 1/4 - 3/8 inches in diameter and can grow as large as up to 2 inches in diameter. A sexually mature Asian clam may release hundreds to thousands of veligers each day. These juveniles will become mature and may be capable of spawning in less than a year.

Mussels

Zebra mussels (*Dreissena polymorpha*) and quagga mussels (*D. rostriformis bugensis*) have spread rapidly across the country since they were first discovered in the Great Lakes in the late 1980s. Zebra and quagga mussels are small freshwater mussels that can colonize rapidly on hard surfaces. These mussels are now present in every major river basin in the U.S. except the Columbia River Basin. The Independent Economic Advisory Board completed a study in 2013, at the request of the Northwest Power and Conservation Council, which reported it is likely zebra and quagga mussels will eventually colonize some of the large rivers of the Columbia Basin (IEAB 2013).

The environmental, economic, and social/human health risks of zebra and quagga mussels can be catastrophic. Zebra and quagga mussels are ecosystem changers that are continuing to completely alter the aquatic communities in watersheds where they have become established. These mussels are prodigious water filterers, removing substantial amounts of phytoplankton and suspended particulate from the water, which decreases the food source for zooplankton, thereby altering the food web (USGS 2017). There is a substantial economic risk in the hundreds of millions of dollars annually if these mussels become established in the Columbia Basin, and costs to mitigate for zebra or quagga mussels at hydropower facilities within this basin would be significantly greater than those incurred at other infested sites around the country due to their comprehensive fish passage facilities (IEAB 2013). USACE estimated in 2022 that the potential cost to protect hydroelectric facilities, salmon fisheries, and private watercrafts in the Columbia River Basin from quagga or zebra mussel infestation could total approximately \$185 million per year (GAO 2023).

Health risks associated with a zebra and quagga mussel infestation include contamination of water supplies and increased occurrences of blue-green and other toxic algae blooms. The

mussels also can concentrate contaminated sediments up to 300,000 times ambient levels and then disperse these into the food chain through direct consumption or through fecal matter, which has then killed wildlife and could sicken humans. They are also a freshwater bio-fouler that can quickly reduce or stop flows in water supply systems, plug water cooling systems in watercraft motors, and create physical hazards to fish and humans as their shells can cut skin.

Adult and juvenile mussels can be transported to different waterbodies by waterfowl and by attachment to boat hulls, crayfish, and turtles. Larval stage mussels (i.e., veligers) can be transported in anglers' bait bucket water and boat engine cooling water. Like other introduced, non-native species, such as watermilfoil, these exotic mussels can reproduce rapidly because natural predators are not present to regulate the population.

In general, mussels are very prolific, producing as many as 1 million eggs per year. Fertilization takes place in the water, and the veligers produced spend a few weeks floating in the water, feeding on tiny plankton and bits of detritus. At about 3 to 4 weeks, the veligers' shells become heavy enough to cause them to sink. At this point the fully developed larva settles onto a solid underwater surface such as a rock, concrete, wood, a plant, or a native mussel shell, and becomes a juvenile. Zebra and quagga mussels cling to surfaces by using thread-like strands called byssal fibers tipped with a strong, sticky substance. Native mussels do not have byssal fibers. Once attached, mussels generally stay in one place, but can detach and crawl to a new location if environmental conditions change. Mortality is very high during the larval period, however, once settled, the juveniles grow rapidly, and usually are mature and ready to reproduce in their second year. They typically live for 1-5 years.

While zebra mussels are limited to colonizing hard surfaces, quagga mussels can also colonize on soft substrates. Quagga mussels are also able to survive in low-food environments, so when both species co-exist, quagga mussels are the dominant species and can out-compete zebra mussels (Burlakova et al. 2018).

USACE conducts surveys (veliger sampling) in Lake Pend Oreille and the Pend Oreille River, and the ISDA conducts boat inspections to monitor for these species. To date, these invasive mussels have not been found in the Clark Fork/Pend Oreille subbasins. However, ISDA did confirm the presence of quagga mussels in the Snake River near Twin Falls in September 2023. In October 2023, ISDA implemented a treatment to eradicate the mussels in a 6-mile section of the Snake River that also resulted in the death of thousands of fish.

Terrestrial Plants

Helpful Websites

weed-id.com - Identification

bugwood.org - Identification

pnwhandbooks.org - Chemical recommendations

iawcs.org - Idaho Association of Weed Control Superintendents

invasivespecies.idaho.gov - Idaho State Dept. of Agriculture

invasivespeciesinfo.gov - USDA Invasive species info.

wssa.net - Weed Science Society of America

invasive.org - Center for Invasive Species and Ecosystem Health.

nezpercebiocontrol.com - Biological Control website.

bonnercountyid.gov/noxious-weeds - Noxious Weeds Department

Reed Canarygrass

Reed canarygrass is an invasive plant that is not on the Bonner County noxious weed list as the plant is still used in agriculture. The grass is well established in many wetlands and shoreline habitats around Lake Pend Oreille and the Pend Oreille River. Reed canary grass forms monotypic stands that crowd out native species and prevents native species from natural succession. Reed canary grass can provide as marginal habitat for amphibian breeding in areas of seasonal inundation but does not provide suitable nesting habitat for geese and waterfowl as the plant grows too tall at the nesting season. Wildlife do not tend to eat the grass. Overall, reed canary grass provides lower quality habitat for wildlife than native plant communities, forms monocultures that choke out native species, and because it has spread with very little opposition, the species has become a dominant vegetative cover on many USACE lands. Because many Federal, state, and county land managers now find themselves challenged to control reed canary grass in wetland areas, this appendix provides information on the plant's biology, ecological impacts, and history of control treatments. It is hoped that this information will assist in developing treatment plans. Numerous sources have performed literature reviews on the natural history, taxonomy, or ecology of reed canary grass (Antieau 1998, Apfelbaum and Sams 1987, Jenkins et al. 2008, Lavergne and Molofsky 2004, Seebacher 2008, Tu 2004, USDA 2013), and the highlights are summarized below.

Biology

Reed canarygrass grows to a height of 2 to 9 feet, with flat, rough-textured, tapering leaves from about 3-10 inches long. The stem is hairless and stands erect. Ligules are membranous (transparent) and long. One of the first grasses to sprout in the spring, reed canary grass produces a compact panicle 3-16 inches long that is erect or slightly spreading. The flowers are green to purple early in the season and change to beige over time (Figure 3). Reed canary grass is morphologically variable, and more than ten infraspecific categories (varieties, subspecies, forms, and races) have been described. These categories are based on characteristics such as the amount of branching, leaf color, size, shape, and density of inflorescences. Differences in the height at maturity, and in size, shape, and color of the inflorescence may depend on the

habitat. There are no known morphological features for this species that allow native individuals to be distinguished from non-natives (Anderson 1961).

The species reproduces sexually and asexually, and the grass forms a thick rhizome system that quickly dominates the soil within one growing season. Proliferation is enhanced greatly because seeds germinate immediately after ripening; there are no known dormancy requirements. Field observations (Baltensperger and Kalton 1958) indicate considerable variability in height, size, and shape of inflorescence, and in overall coloration. These authors showed that plant height, panicle size, and shape could not be correlated with geographic distribution or with each other, suggesting a high degree of inherent plasticity. Reed canary grass grows as a perennial from scaly creeping rhizomes, with culms usually from 1.6-6.6 feet in height and panicles varying from 2.8-15.6 inches in length (Baltensperger and Kalton 1958).

Unlike many grasses, such as creeping red fescue (*Festuca rubra*) and red top (*Agrostis alba*), reed canary grass grows vertically for 5 to 7 weeks after germination, after which tillering occurs (Comes et al. 1981). Ninety-seven percent of canary grass seed grown in the greenhouse germinates immediately after harvest (Comes et al. 1981). Seeds stored in damp sand germinate after a year of alternating temperatures. Rhizome development in greenhouses occurs 26 days after germination. Sixteen weeks after germination, plants bloom and have an average of 48 rhizomes (2.5 inches average length) per plant. In the field, at least 88 percent of emergent shoots on established plants originate from rhizome or tiller buds located in the upper 2 inches of the soil. Laboratory studies using mature roots indicate that 74 percent of new shoots originate from rhizomes and the remainder from auxiliary buds on basal nodes (Casler and Hovin 1980). Few shoots arose from buds deeper than 7.9 inches and no tiller development occurred below this depth (Comes et al. 1981). Vegetative vigor is related to maximum root and shoot production (Casler and Hovin 1980). Significantly increased growth (indicated by increased stem density) was found to be associated with nutrient enrichment elevated tissue levels of nitrogen and phosphorus also resulted when nutrient levels were increased (Ho 1980).



Figure 3. (A) Showing reed canary grass inflorescence. (B) The grass invading a wetland area. (C) Reed canarygrass surviving over half the year in 4 feet of water at the Clark Fork River delta (photograph: K. Cousins).

Reed canary grass tolerates a wide range of ecological conditions and exhibits a high level of plasticity for coping with these different environments. It survives prolonged flooding by possessing anoxia tolerant rhizomes (Brandle 1983). Barclay and Crawford (1983) found carbohydrate levels in reed canary grass rhizomes to be very stable and suggested this related to the survivability of plants during prolonged anoxic periods. The species is reported to

tolerate annual precipitation of 1.2-10.2 inches, annual temperatures of 41-73 °F, and a soil pH of 4.5 to 8.2. However, reed canary grass does not perform well in subtropical or tropical climates (Lyons 1998). In low soil nutrient levels, reed canary grass has a higher root/shoot ratio than native species (Green and Galatowitsch 2001) and can take advantage of increased nutrient inputs as well. When nutrient availability is increased, reed canary grass increased its biomass production (Wetzel and van der Valk 1998), decreased its allocation to roots (Figiel et al. 1995, Green and Galatowitsch 2001), and showed higher rates of clonal spread and tiller production (Maurer and Zedler 2002). Under conditions of physical limitations, such as under increased soil organic matter, reed canary grass can also adjust the anatomy of its roots by increasing the total rhizome diameter and the proportion of central cylinder (Dusek 2003). Due to this high degree of plasticity, reed canary grass can displace many different native species along resource gradients.

Ecological Impacts of Reed Canary grass Invasion

From an ecological perspective, reed canary grass competitively excludes other native plant species and limits the biological and habitat diversity of host wetland and riparian habitats. These changes precipitate effects on other wetland and riparian functions such as wildlife habitat. Numerous papers have documented the deleterious effects that reed canary grass invasion has on biotic and abiotic factors in these habitats. Reed canary grass is a major threat to hydrology, birds, mammals, reptiles and amphibians, invertebrates, and native plants (Annen 2011, Antieau 1998, Apfelbaum and Sams 1987, Kilbride and Paveglio 1999, Lavergne and Molofsky 2004, 2007, Melvin 2003, Miller et al. 2008, Naglich 1994, Reinhardt and Galatowitsch 2004, WRMWG 2009). Many additional peer-reviewed research papers, technical pamphlets, working group reports, Master's theses, and other documents address the subject of controlling reed canary grass for the benefit of a native system or species.

The presence of reed canary grass impacts the structure of natural habitats. Lavergne and Molofsky (2004) performed a literature review on reed canary grass and stated that “the impacts of invasion occurs in similar habitats in both the native and introduced range.” In its introduced range, the grass takes over wetlands (Galatowitsch et al. 1999, Padgett and Crow 1994), wet grasslands (Galatowitsch et al. 2000), riparian areas, and stream banks (Barnes 1999, Leck 1996). It can also clog waterways (Hodgson 1968, Lefor 1987) and invade wet sections of pastures in uplands (see references in Paveglio and Kilbride 2000). In recently reflooded zones, reed canary grass first persists as floating mats, which then form numerous nodes with adventitious roots (Coops et al. 1996). Fragmentation at these nodes enhances the spread of reed canary grass until it completely chokes water circulation in ponds and along shorelines (Lefor 1987). By growing vigorously on streambanks reed canary grass can increase sediment deposition, which further limits water circulation (Hodgson 1968). In wet sedge meadows, the high sediment deposition due to the development of monotypic stands of reed canary grass has been shown to decrease soil microstructure and organic content, and ultimately to reduce heterogeneity in habitat microtopography (Werner and Zedler 2002). Reed canary grass also evapotranspires large quantities of soil moisture and potentially affects shallow groundwater hydrologic characteristics (Antieau 1998).

Reed canary grass contains alkaloid compounds, and though the ecotypes introduced or created in the United States have lower levels than native or European phenotypes. In West Virginia, a diagnosis of delayed reed canary grass toxicosis was made on cattle that had signs of staggers. Over a two-month period, 18 cows died with the clinical signs of this poisoning (Binder et al. 2010). Reed canary grass leaf litter may also be toxic to tadpoles (Cohen 2009).

A few studies describe the negative impact of reed canary grass invasion on insect communities. In wetlands, Hansen and Castelle (1999) documented very low soil insect diversity in a marsh dominated by monocultures of reed canary grass, when compared to adjacent marshes dominated by native species. Moreover, in their survey of feeding habits and host plants of Diptera, Coleoptera, and Lepidoptera species of Southern Quebec wetlands, Beaulieu and Wheeler (2002) established that stands of reed canary grass were feeding or hosting fewer trophic groups of insects and more numerous invasive insect species than the native plants.

History of Control Treatments

Management techniques used to control reed canary grass biomass have included fire, grazing, mowing, and haying, chemical control, shading, mulching or solarization, scalping or excavating, flooding, and others. The most common control method applied is the use of chemical herbicides, sometimes in combination with mowing or burning. The grass likes to be burned, and so burning is not a recommended treatment unless it is combined with another treatment method. In the Lake Pend Oreille and Pend Oreille River areas, reed canary grass appears to have evolved to withstand long periods of inundation, so using water to flood areas will not stop it from invading wetland areas (K. Cousins, pers. comm.). It has been suggested that short-term or single-method management attempts are bound to fail given this species' formidable ability to survive and reproduce.

In southwestern Washington seasonal wetlands, Pavaglio and Kilbride (2000) evaluated three control methods such as 1) mechanical, 2) chemical and 3) water level control during three growing seasons. Stem densities of the reed canary grass were reduced most by spraying and disking with a follow-up application of Rodeo during the next growing season. Disking with a follow-up application of Rodeo during the following growing season generally had similar reed canary grass control as the most efficacious treatment.

Research conducted at universities in the Intermountain West focused on genetics, suppression methods, and ecological effects of reed canary grass (Hardesty 2012, pers. comm, McNeeley 2013, pers. comm.). For instance, Forman (1998) tested control methods of combinations of five levels of shade and up to five defoliations per year at the Turnbull National Wildlife Refuge in Eastern Washington. They found that reed canary grass above-ground biomass was reduced 80 percent by the maximum treatment combination: 80 percent shade and five defoliations per year. However, that treatment method was found to be impractical for large-scale wetland restoration projects, and the grass recovered once the shade cloth was removed. The Avista Corporation also tested applying shade cloth to several areas along the Clark Fork River and found that the grass returned as soon as the cloth was removed (N. Hall, pers. comm.).

Ducks Unlimited (DU) has worked with landowners and agencies in eastern Washington and Idaho for at least 20 years to restore wetlands by limiting reed canary grass at large and small restoration sites followed by rigorous plantings of native species. Findings from DU efforts support the need to develop a multi-year treatment and integrated approach. This work also found that annual evaluation and treatments of undesirable vegetation at restoration sites will always be required to a certain extent. Restoration efforts at the Pack River Delta and Clark Fork River Delta restoration projects suggest that scraping the top 6 inches of reed canary grass infested soil and burying the soil under at least 2 feet of clean soil, followed by herbicide treatments, and plantings of native species can be successful to control the grass. In addition, once the reed canary grass cover was removed, seeds from native species were still present in the soils and were able to regenerate. However, this aggressive approach may not be feasible for all areas.

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Appendix C

THREATENED AND ENDANGERED WILDLIFE SPECIES AND OTHER
SPECIES OF CONCERN

This appendix contains check lists of the various wildlife species that might occur on USACE lands on Lake Pend Oreille and the Pend Oreille River. This appendix also has brief descriptions of life history and habitat preferences for species listed under the Endangered Species Act.

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Threatened and Endangered Species Listed Under the Endangered Species Act (ESA)

The following are brief life history descriptions for wildlife species listed under ESA and present in North Idaho, but not necessarily present on U.S. Army Corps of Engineers (USACE) lands.

Canada Lynx (Threatened)

The distribution of lynx (*Lynx canadensis*) in Idaho is closely associated with the distribution of boreal forest and sub-alpine forests. Within these forest types, lynx are most likely to persist in areas that receive deep snow and have high-density populations of snowshoe hares (*Lepus americanus*), the principal prey of lynx. Lynx typically mate in March and April, and kittens are born from late April to mid-June. Litter sizes, ranging from 1 to 6, and kitten survival correlate with hare abundance. Litters of 4 or 5 and high kitten survival are common when snowshoe hare numbers are high. When hare numbers are low, little or no reproduction may occur and few or no kittens survive to be recruited into the population. Overall, when hare numbers are low, lynx experience widespread food shortages and many die of starvation or abandon home ranges to search for adequate prey. It is during these dispersal periods that lynx may have the potential to be on USACE lands. However, the habitat types on USACE lands are not their preferred habitat. Because of this habitat preference, it is very rare to find lynx in the lower valley areas of Lake Pend Oreille and the Pend Oreille River.

Woodland Caribou (Endangered)

Historically, woodland caribou (*Rangifer tarandus caribou*) inhabited the forests of the northern United States from Maine to Washington State. This range for this species is now reduced to one herd in the Selkirk Mountains of North Idaho, and portions of eastern Washington and southern British Columbia. Caribou are generally found above 4,000 feet elevation in Engelmann spruce/sub-alpine fir and western red cedar/western hemlock forest habitat types. Caribou have special adaptations that allow them to survive their harsh arctic environment. Long legs and broad, flat hooves help them walk on snow and on soft ground such as a peat bog. A dense woolly undercoat overlain by stiff, hollow guard hairs keeps them warm. Caribou can dig for food using their large, sharp hooves. Caribou feed on sedges, grasses, fungi, lichens, mosses, and the leaves and twigs of woody plants such as willows and birches. The Selkirk herd is reduced to approximately 25 to 30 animals that tend to stay mostly in the Canadian part of its range; therefore, caribou are not expected to be found in the lower valley areas of Lake Pend Oreille and the Pend Oreille River.

Grizzly Bear (Threatened)

Grizzly bears (*Ursus arctos horribilis*) need a very large home range (50 to 300 square miles for females; 200 to 500 square miles for males), encompassing diverse forests interspersed with moist meadows and grasslands in or near mountains. The grizzly bear is generally reclusive and sensitive to human disturbance. Interactions with humans, which do occur, are mainly in undeveloped or lightly developed areas, and then usually in the presence of nuisance attractions such as near a bird feeder or unsecured garbage. A deadly interaction did occur between a wounded grizzly bear and hunter in Boundary County in 2011.

Grizzly bears are mostly solitary except during mating, and in the case of females rearing cubs. Early in the fall, grizzly bears begin looking for a proper place to dig their dens and may travel many miles before finding a suitable area. The bears will seek a high, remote mountain slope where deep snow will serve as insulation until spring. The grizzly bear will generally enter its den in October or November. During the next 5 to 6 months, the grizzly will not consume water or nourishment but will use up its accumulated fat. Male grizzly bears usually emerge from the den in March or April, while females emerge in late April and May.

Grizzly bears are omnivorous, foraging on berries, leaves, bulbs, and roots as well as insects, small mammals, carrion, occasional larger mammals, and fish. About 80 to 90 percent of the grizzly's food is green vegetation, wild fruits and berries, nuts, and bulbs or roots of certain plants. Grizzly bears also eat a great deal of insects, sometimes tearing rotten logs apart and turning over heavy stones in search of the adult insects or their larvae. Most of the meat in the bear's diet comes from animal carcasses, or carrion, of big game animals, although it will sometimes prey on elk or moose calves or smaller mammals.

In recent years, the grizzly bear populations in the Cabinet and Selkirk Mountains have been increasing and there are more instances of bears dispersing looking for new territories. Grizzly bears have been observed in lower elevation areas near USACE lands in the Pack River and Clark Fork River Delta, but there have been no observations of grizzly bears west of Sandpoint. Because of the generally developed nature of the surrounding area (roadways, residences adjacent to sites, camping and boating activities in area) and high degree of habitat fragmentation, grizzly bear use of USACE lands would be a rare occurrence.

North American Wolverine (Threatened)

Wolverines (*Gulo gulo luscus*) are active year-round and are wide-ranging animals known for traveling great distances in a short period. Several factors can affect wolverine movements within territories, such as availability of food, temperature, and breeding activity. When not searching for new territories, the wolverine's preferred habitat is within mountainous areas defined by deep persistent spring snow. Persistent stable snow cover is an important feature of denning habitat, and most likely provides some protection from predators.

Wolverine mating is assumed to occur between May and July, with June being the peak in a wolverine mating season. The reproductive rate of wolverines is relatively low. Young are born between late-January to mid-April and are weaned by late-April or May. The average litter size is 2 cubs or kits. Young wolverines are born with a white coat and blind until about 4 weeks of age. At about 3 months the cubs replace their juvenile coat with the adult summer coat and at about 8 months are fully grown. The cubs become independent from their mother at about 5 or 6 months.

Wolverines are opportunistic feeders and consume a variety of foods depending on availability. They primarily scavenge carrion, but also prey on small animals and birds, and eat fruits, berries, and insects. Native mountain goats (*Oreamnos americanus*) that occupy high elevation winter range in portions of the Cabinet Mountains are most likely an important component of the wolverine winter diet, particularly during the reproductive denning period.

Because wolverines occur at low densities and occupy remote mountainous habitats, their presence can be difficult to detect. The number of individuals that occupy habitats in Idaho is unknown. Wolverines have four verified observations in Bonner County. All the observations were in mountainous habitats. One unverified observation of a wolverine was reported traversing the Clark Fork River Delta. Wolverines tend to avoid human activity and roads and are mostly found in alpine habitats above the tree line, as well as in forested landscapes. For these reasons, it is unlikely that a wolverine would be present on USACE lands.

Yellow-billed Cuckoo (Threatened)

The yellow-billed cuckoo (*Coccyzus americanus*) prefers riparian habitat areas that are several hundred acres and rarely use small riparian areas 20 acres or less (Laymon and Halterman 1989). The loss and degradation of native riparian habitat throughout the yellow-billed cuckoo's range have played a major role in the bird's decline (USFWS 2013). No records of yellow-billed cuckoo occurring in the project area exist. Forested riparian area is their preferred habitat. The most northern observations of the bird in Idaho occurred between 1984 and 1992, and are from Latah County over 120 miles from the Albeni Falls Dam project area (IFWIS 2020).

Whitebark Pine (Candidate)

Whitebark pine (*Pinus albicaulis*) occurs in high-elevation cold conditions in both the northern and southern parts of Idaho. Ecologically, whitebark pine is important as its seeds are a valued wildlife food for birds, squirrels, and bears. Whitebark pine also is important in reducing avalanche potential and soil erosion. Whitebark pine, like western white pine (*Pinus monticola*), is a five-needle, white pine that is very susceptible to the introduced white pine blister rust disease. Whitebark pine stands have also declined as a result of fire suppression efforts and mountain pine beetle attacks, which has allowed subalpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmannii*) to increase on many sites with the whitebark pine. These species can continue to grow in the shade of other trees, but the whitebark pine does not tolerate as much shade and over time is replaced. Due to this plant's preference for high

alpine habitats, it is not found on USACE lands along the lower elevations along Lake Pend Oreille and the Pend Oreille River.

Monarch Butterfly (Candidate)

The monarch butterfly (*Danaus plexippus*) has four distinct life stages: egg, larva (caterpillar), pupa (chrysalis), and adult. Adult monarch butterflies feed on the nectar of a wide variety of flowering plants. However, their caterpillars only eat the leaves of milkweed plants, and so these butterflies can only breed in areas where milkweed is present. Milkweed leaves are toxic due to the presence of a collection of molecules called cardenolides. Monarch butterflies evolved a resistance to these molecules and can tolerate them in much higher concentrations than other animals. The butterflies store the cardenolides in their bodies making them unpalatable or poisonous and this provides them protection from predation. Milkweed plants and monarch butterflies are observed on some USACE lands and so the species is present in the area.

Monarch butterflies migrate annually between their northern breeding grounds and their southern overwintering grounds. The southerly migration occurs in late summer or early autumn and is completed by a single generation of butterflies. Most monarch butterflies become sexually mature around 4 to 5 days after they emerge and only live for 2 to 5 weeks. However, the migratory generation does not become sexually mature until overwintering is complete, and this generation of monarch butterflies can live for up to 9 months. Butterflies in the migratory generation spend winter huddled together on fir trees. Once spring arrives, they begin the journey back north, but do not complete this journey themselves. Instead, they only travel part of the way before stopping to lay eggs that will develop into the next generation. This generation then continues the migration before stopping to lay their own eggs. The process repeats in this way for up to 4 or 5 generations before the butterflies finally reach their breeding grounds.

For many years, it was assumed that monarch butterflies west of the Rocky Mountains overwinter on the Pacific coast (California) while monarchs east of the Rockies migrate to central Mexico. However, monarch butterflies tagged in Idaho and Washington have been recovered in Utah as well as California. Further, monarch butterflies tagged in Arizona have been recovered in Mexico as well as the west coast of California. These findings along with genetic studies suggest that there is interbreeding of eastern and western populations of monarch butterflies.

State Ranking of Threatened, Endangered, and Species of Concern in Bonner County

Source: Idaho Department of Fish and Game

Definitions:

SGCN – State designation of Species of Greatest Conservation Need

In State Ranking:

1 = Critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction (typically 5 or fewer occurrences).

2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences).

3 = Rare or uncommon but not imperiled (typically 21 to 100 occurrences).

4 = Not rare and apparently secure, but with cause for long-term concern (usually more than 100 occurrences).

5 = Demonstrably widespread, abundant, and secure.

U = Unrankable.

H = Historical occurrence (i.e., formerly part of the native biota; implied expectation that it might be rediscovered or possibly extinct).

X = Presumed extinct or extirpated.

Q = Indicates uncertainty about taxonomic status.

? = Uncertainty exists about the stated rank.

NR = Not ranked.

NA = Conservation status rank is not applicable.

INPS – Idaho Native Plant Society

INPS Rare Plant List: Rare plants are native taxa (species, subspecies, or varieties) considered imperiled or vulnerable in Idaho. This is the bulk of the list.

Species Tables

Table 1. Endangered, Threatened, State Sensitive, and Ranked Birds.

Common Name	Scientific Name	State Status	SGCN	Federal Status
Harlequin Duck	<i>Histrionicus histrionicus</i>	1B	Tier 2	
Northern Pintail	<i>Anas acuta</i>	4B, 4N		
Northern Shoveler	<i>Anas clypeata</i>	4B, 4N		
American Wigeon	<i>Anas americana</i>	4B, 4N		
Mallard	<i>Anas platyrhynchos</i>	4B, 4N		
Green-winged Teal	<i>Anas crecca</i>	4B, 3N		
Blue-winged Teal	<i>Anas discors</i>	2B		
Cinnamon Teal	<i>Anas cyanoptera</i>	4B		
Eurasian Wigeon	<i>Anas penelope</i>	1N		
Gadwall	<i>Anas strepera</i>	3		
Barrow's Goldeneye	<i>Bucephala islandica</i>	3B, 3N		
Common Goldeneye	<i>Bucephala clangula</i>	5B, 5N		
Bufflehead	<i>Bucephala albeola</i>	1B, 1N		
Wood Duck	<i>Aix sponsa</i>	4B, 4N		
Lesser Scaup	<i>Aythya affinis</i>	3B, 3N		
Redhead	<i>Aythya americana</i>	4		
Ring-necked Duck	<i>Aythya collaris</i>	4B, 4N		
Canvasback	<i>Aythya valisineria</i>	3B, 3N		
Long-tailed Duck	<i>Clangula hyemalis</i>	1N		
Ruddy Duck	<i>Oxyura jamaicensis</i>	2		
Clark's Grebe	<i>Aechmophorus clarkii</i>	2B	Tier 2	
Eared Grebe	<i>Podiceps nigricollis</i>	1N, 2B		
Horned Grebe	<i>Podiceps auritus</i>	2N		
Pied-billed Grebe	<i>Podilymbus podiceps</i>	3		
Red-necked Grebe	<i>Podiceps grisegena</i>	2B		
Western Grebe	<i>Aechmophorus occidentalis</i>	2B	Tier 2	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	4B		
Common Merganser	<i>Mergus merganser</i>	3		
Hooded Merganser	<i>Lophodytes cucullatus</i>	2B, 2N		
Red-breasted Merganser	<i>Mergus serrator</i>	1M		
Greater White-fronted Goose	<i>Anser albifrons</i>	4M		
Canada Goose	<i>Branta canadensis</i>	5B, 5N		
Snow Goose or Blue Goose	<i>Chen caerulescens</i>	5M		
Ross's Goose	<i>Chen rossii</i>	3M		
Trumpeter Swan	<i>Cygnus buccinator</i>	1B, 4N	Tier 2	

Common Name	Scientific Name	State Status	SGCN	Federal Status
Tundra Swan	<i>Cygnus columbianus</i>	4M, 4N		
American Coot	<i>Fulica americana</i>	4B, 4N		
Common Loon	<i>Gavia immer</i>	1B, 2N	Tier 2	
Yellow-billed Loon	<i>Gavia adamsii</i>	N, A		
Herring Gull	<i>Larus argentatus</i>	2N		
California Gull	<i>Larus californicus</i>	3B, 2N	Tier 2	
Ring-billed Gull	<i>Larus delawarensis</i>	2B, 2N	Tier 3	
Glaucous-winged Gull	<i>Larus glaucescens</i>	1N		
American White Pelican	<i>Pelecanus erythrorhynchos</i>	3B	Tier 2	
Black Tern	<i>Chlidonias niger</i>	2B	Tier 2	
Forster's Tern	<i>Sterna forsteri</i>	2B		
American Avocet	<i>Recurvirostra americana</i>	3B, 3M		
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	4M		
Marbled Godwit	<i>Limosa fedoa</i>	2M		
Sora	<i>Porzana carolina</i>	1N, 4B		
Virginia Rail	<i>Rallus limicola</i>	2N, 3B		
Spotted Sandpiper	<i>Actitis macularia</i>	3B		
Sanderling	<i>Calidris alba</i>	1M		
Dunlin	<i>Calidris alpina</i>	1M		
Baird's Sandpiper	<i>Calidris bairdii</i>	2M		
Western Sandpiper	<i>Calidris mauri</i>	3M		
Pectoral Sandpiper	<i>Calidris melanotos</i>	2M		
Least Sandpiper	<i>Calidris minutilla</i>	3M		
Solitary Sandpiper	<i>Tringa solitaria</i>	1M		
Semipalmated Plover	<i>Charadrius semipalmatus</i>	1M		
American Golden-Plover	<i>Pluvialis dominica</i>	1M		
Black-bellied Plover	<i>Pluvialis squatarola</i>	1M		
Wilson's Snipe	<i>Gallinago delicata</i>	3N, 4B		
Great Blue Heron	<i>Ardea herodias</i>	5B		
Sandhill Crane	<i>Grus canadensis</i>	3B	Tier 3	
Lesser Yellowlegs	<i>Tringa flavipes</i>	2M		
Greater Yellowlegs	<i>Tringa melanoleuca</i>	3M		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	5		Delisted
Golden Eagle	<i>Aquila chrysaetos</i>	3	Tier 2	
Peregrine Falcon	<i>Falco peregrinus anatum</i>	3B		Delisted
Merlin	<i>Falco columbarius</i>	4		
Prairie Falcon	<i>Falco mexicanus</i>	4		
Osprey	<i>Pandion haliaetus</i>	4B		
Northern Goshawk	<i>Accipiter gentilis</i>	3		
Cooper's Hawk	<i>Accipiter cooperii</i>	4		
Ferruginous Hawk	<i>Buteo regalis</i>	3B	Tier 2	
Rough-legged Hawk	<i>Buteo lagopus</i>	4N		
Sharp-shinned Hawk	<i>Accipiter striatus</i>	4		
Common Nighthawk	<i>Chordeiles minor</i>	4B	Tier 3	

Common Name	Scientific Name	State Status	SGCN	Federal Status
American Kestrel	<i>Falco sparverius</i>	4		
Northern Harrier	<i>Circus cyaneus</i>	4		
Turkey Vulture	<i>Cathartes aura</i>	5B		
Veery	<i>Catharus fuscescens</i>	3B		
Barred Owl	<i>Strix varia</i>	4		
Boreal Owl	<i>Aegolius funereus</i>	1		
Burrowing Owl	<i>Athene cunicularia</i>	2B	Tier 2	
Flammulated Owl	<i>Psilosops flammeolus</i>	3B		
Great Gray Owl	<i>Strix nebulosa</i>	3	Tier 3	
Great Horned Owl	<i>Bubo virginianus</i>	5		
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	3		
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	4		
Short-eared Owl	<i>Asio flammeus</i>	3	Tier 3	
Long-eared Owl	<i>Asio otus</i>	5		
Western Screech-Owl	<i>Otus kennicottii</i>	1		
Black-backed Woodpecker	<i>Picoides arcticus</i>	4		
Pileated Woodpecker	<i>Dryocopus pileatus</i>	4		
Lewis's Woodpecker	<i>Melanerpes lewis</i>	3B	Tier 2	
Three-toed Woodpecker	<i>Picoides dorsalis</i>	4		
White-headed Woodpecker	<i>Picoides albolarvatus</i>	2	Tier 3	
Hairy Woodpecker	<i>Picoides villosus</i>	4		
Downy Woodpecker	<i>Picoides pubescens</i>	4		
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	4B		
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	4B		
Mountain Quail	<i>Oreortyx pictus</i>	2	Tier 2	
Mourning Dove	<i>Zenaida macroura</i>	5		
Dusky Grouse	<i>Dendragapus obscurus</i>	5		
Spruce Grouse	<i>Falcapennis canadensis</i>	4		
Black Swift	<i>Cypseloides niger</i>	1B	Tier 2	
Gray Jay	<i>Perisoreus canadensis</i>	5		
Blue Jay	<i>Cyanocitta cristata</i>	1N		
Steller's Jay	<i>Cyanocitta stelleri</i>	5		
Canada Jay	<i>Perisoreus canadensis</i>	2		
Killdeer	<i>Charadrius vociferus</i>	4B, 4N		
Belted Kingfisher	<i>Ceryle alcyon</i>	4		
American Crow	<i>Corvus brachyrhynchos</i>	5		
Common Raven	<i>Corvus corax</i>	5		
Black-billed Magpie	<i>Pica hudsonia</i>	5		
Hermit Thrush	<i>Catharus guttatus</i>	4B		
Swainson's Thrush	<i>Catharus ustulatus</i>	5B		
Varied Thrush	<i>Ixoreus naevius</i>	4		
Northern Waterthrush	<i>Parkesia noveboracensis</i>	4B		
Canyon Wren	<i>Catherpes mexicanus</i>	5		
Marsh Wren	<i>Cistothorus palustris</i>	5B, 5N		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Rock Wren	<i>Salpinctes obsoletus</i>	5B		
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	3B	Tier 3	
Sagebrush Sparrow	<i>Artemisiospiza nevadensis</i>	3B	Tier 2	
Savannah Sparrow	<i>Passerculus sandwichensis</i>	5B		
Fox Sparrow	<i>Passerella iliaca</i>	4B		
Vesper Sparrow	<i>Pooecetes gramineus</i>	5B		
Brewer's Sparrow	<i>Spizella breweri</i>	4B		
Chipping Sparrow	<i>Spizella passerine</i>	4B		
Barn Swallow	<i>Hirundo rustica</i>	5B		
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	5B		
Bank Swallow	<i>Riparia riparia</i>	4B		
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	4B		
Tree Swallow	<i>Tachycineta bicolor</i>	5B		
Violet-green Swallow	<i>Tachycineta thalassina</i>	5B		
White-throated Sparrow	<i>Zonotrichia albicollis</i>	1N		
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	5		
American Bittern	<i>Botaurus lentiginosus</i>	1B	Tier 2	
Ruffed Grouse	<i>Bonasa umbellus</i>	4		
Olive-sided Flycatcher	<i>Contopus cooperi</i>	3B	Tier 3	
Hammond's Flycatcher	<i>Empidonax hammondi</i>	5B		
Least Flycatcher	<i>Empidonax minimus</i>	2B		
Dusky Flycatcher	<i>Empidonax oberholseri</i>	4B		
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	5B		
Willow Flycatcher	<i>Empidonax traillii</i>	4B		
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	5B		
Calliope Hummingbird	<i>Selasphorus calliope</i>	4B		
Rufous Hummingbird	<i>Selasphorus rufus</i>	4B		
Boreal Chickadee	<i>Poecile hudsonicus</i>	1		
Black-capped Chickadee	<i>Poecile atricapillus</i>	4		
Mountain Chickadee	<i>Poecile gambeli</i>	4		
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	5		
Common Redpoll	<i>Acanthis flammea</i>	3N		
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	5		
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	4B		
American Pipit	<i>Anthus rubescens</i>	3B		
Cedar Waxwing	<i>Bombycilla cedrorum</i>	5		
Bohemian Waxwing	<i>Bombycilla garrulus</i>	4N		
Wilson's Warbler	<i>Cardellina pusilla</i>	4B		
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	5B		
Orange-crowned Warbler	<i>Oreothlypis celata</i>	4B		
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	4B		
Yellow-rumped Warbler	<i>Setophaga coronate</i>	5		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Yellow Warbler	<i>Setophaga petechia</i>	5		
American Redstart	<i>Setophaga ruticilla</i>	2B		
Townsend's Warbler	<i>Setophaga townsendi</i>	5B		
Brown Creeper	<i>Certhia americana</i>	4		
Vaux's Swift	<i>Chaetura vauxi</i>	3B		
American Dipper	<i>Cinclus mexicanus</i>	3		
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	4		
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	5B		
Pine Grosbeak	<i>Pinicola enucleator</i>	4		
Northern Flicker	<i>Colaptes auratus</i>	5		
Western Wood-Pewee	<i>Contopus sordidulus</i>	5B		
Ruby-crowned Kinglet	<i>Corthylio calendula</i>	4		
Golden-crowned Kinglet	<i>Regulus satrapa</i>	5		
Bobolink	<i>Dolichonyx oryzivorus</i>	2B	Tier 2	
Gray Catbird	<i>Dumetella carolinensis</i>	5B		
Horned Lark	<i>Eremophila alpestris</i>	5		
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	4		
Lazuli Bunting	<i>Passerina amoena</i>	4B		
Common Yellowthroat	<i>Geothlypis trichas</i>	5B		
Cassin's Finch	<i>Haemorhous cassinii</i>	4		
Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>	4		
House Finch	<i>Haemorhous mexicanus</i>	4		
American Goldfinch	<i>Spinus tristis</i>	5		
Bullock's Oriole	<i>Icterus bullockii</i>	4B		
Dark-eyed Junco	<i>Junco hyemalis</i>	5		
Northern Shrike	<i>Lanius excubitor</i>	3N		
Red Crossbill	<i>Loxia curvirostra</i>	4		
White-winged Crossbill	<i>Loxia leucoptera</i>	4		
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	5B		
Song Sparrow	<i>Melospiza melodia</i>	5		
Brown-headed Cowbird	<i>Molothrus ater</i>	5B		
Townsend's Solitaire	<i>Myadestes townsendi</i>	5		
Clark's Nutcracker	<i>Nucifraga columbiana</i>	2	Tier 3	
Red-necked Phalarope	<i>Phalaropus lobatus</i>	3M		
Wilson's Phalarope	<i>Phalaropus tricolor</i>	4B		
Spotted Towhee	<i>Pipilo maculatus</i>	4		
Western Tanager	<i>Piranga ludoviciana</i>	5B		
Snow Bunting	<i>Plectrophenax nivalis</i>	4N		
Say's Phoebe	<i>Sayornis saya</i>	5B		
Mountain Bluebird	<i>Sialia currucoides</i>	5B		
Western Bluebird	<i>Sialia mexicana</i>	3B		
Red-breasted Nuthatch	<i>Sitta canadensis</i>	4		
White-breasted Nuthatch	<i>Sitta carolinensis</i>	4		
Pygmy Nuthatch	<i>Sitta pygmaea</i>	4		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Pine Siskin	<i>Spinus pinus</i>	4		
Western Meadowlark	<i>Sturnella neglecta</i>	5		
House Wren	<i>Troglodytes aedon</i>	4B		
Pacific Wren	<i>Troglodytes pacificus</i>	5		
American Robin	<i>Turdus migratorius</i>	5		
Eastern Kingbird	<i>Tyrannus tyrannus</i>	5B		
Western Kingbird	<i>Tyrannus verticalis</i>	5B		
Cassin's Vireo	<i>Vireo cassinii</i>	5B		
Red-eyed Vireo	<i>Vireo olivaceus</i>	4B		

Table 2. Endangered, Threatened, State Sensitive, and Ranked Fish

Common Name	Scientific Name	State Status	SGCN	Federal Status
Longnose Sucker	<i>Catostomus catostomus</i>	3		
Bridgelip Sucker	<i>Catostomus columbianus</i>	4		
Largescale Sucker	<i>Catostomus macrocheilus</i>	4		
Slimy Sculpin	<i>Cottus cognatus</i>	3		
Shorthead Sculpin	<i>Cottus confusus</i>	5		
Torrent Sculpin	<i>Cottus rhotheus</i>	3		
Lake Chub	<i>Couesius plumbeus</i>	3		
Peamouth	<i>Mylocheilus caurinus</i>	3		
Westslope Cutthroat Trout	<i>Oncorhynchus clarki lewisi</i>	4		
Columbia River Redband Trout	<i>Oncorhynchus mykiss gairdneri</i>	4		
Bull trout	<i>Salvelinus confluentus</i>	4		Threatened
Pygmy Whitefish	<i>Prosopium coulteri</i>	4		
Mountain Whitefish	<i>Prosopium williamsoni</i>	5		
Northern Pikeminnow	<i>Ptychocheilus oregonensis</i>	4		
Longnose Dace	<i>Rhinichthys cataractae</i>	4		
Speckled Dace	<i>Rhinichthys osculus</i>	5		
Redside Shiner	<i>Richardsonius balteatus</i>	5		

Table 3. Endangered, Threatened, State Sensitive, and Ranked Mammals

Common Name	Scientific Name	State Status	SGCN	Federal Status
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	3	Tier 3	
Pallid Bat	<i>Antrozous pallidus</i>	3		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Big Brown Bat	<i>Eptesicus fuscus</i>	3		
California Myotis	<i>Myotis californicus</i>	3		
Fringed Myotis	<i>Myotis thysanodes</i>	3		
Hoary Bat	<i>Lasiurus cinereus</i>	3	Tier 2	
Little Brown Myotis	<i>Myotis lucifugus</i>	3	Tier 3	
Long-eared Myotis	<i>Myotis evotis</i>	3		
Long-legged Myotis	<i>Myotis volans</i>	3		
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	3	Tier 2	
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	3	Tier 3	
Yuma Myotis	<i>Myotis yumanensis</i>	3		
American Black Bear	<i>Ursus americanus</i>	4		
Grizzly Bear	<i>Ursus arctos</i>	U	Tier 1	Threatened
Gray Wolf	<i>Canis lupus</i>	4		Delisted
Coyote	<i>Canis latrans</i>	5		
Red Fox	<i>Vulpes vulpes</i>	4		
Lynx	<i>Lynx canadensis</i>	NA		Threatened
Bobcat	<i>Lynx rufus</i>	4		
Mountain Lion, Cougar, or Puma	<i>Puma concolor</i>	5		
Fisher	<i>Martes pennanti</i>	2	Tier 2	
American Marten	<i>Martes americana</i>	5		
Striped Skunk	<i>Mephitis mephitis</i>	4		
Western Spotted Skunk	<i>Spilogale gracilis</i>	4		
Ermine or Short-tailed Weasel	<i>Mustela erminea</i>	4		
Long-tailed Weasel	<i>Mustela frenata</i>	5		
American Mink	<i>Neogale vison</i>	3		
American Badger	<i>Taxidea taxus</i>	4		
North American Wolverine	<i>Gulo gulo luscus</i>	1	Tier 1	Threatened
Woodland Caribou	<i>Rangifer tarandus caribou</i>	1		Endangered
Moose	<i>Alces alces</i>	3		
Elk	<i>Cervus canadensis</i>	5		
Mule Deer	<i>Odocoileus hemionus</i>	4		
White-tailed Deer	<i>Odocoileus virginianus</i>	5		
Mountain Goat	<i>Oreamnos americanus</i>	3	Tier 3	
Red-tailed Chipmunk	<i>Neotamias ruficaudus</i>	4		
Yellow-pine Chipmunk	<i>Neotamis amoenus</i>	5		
Northern Bog Lemming	<i>Synaptomys borealis</i>	3	Tier 3	
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	4		
Golden-mantled Ground Squirrel	<i>Spermophilus lateralis</i>	5		
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	5		
Columbian Ground Squirrel	<i>Urocitellus columbianus</i>	5		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Masked Shrew	<i>Sorex cinereus</i>	5		
Merriam's Shrew	<i>Sorex merriami</i>	4		
Pygmy Shrew	<i>Sorex hoyi</i>	4		
Western Water Shrew	<i>Sorex navigator</i>	4		
Vagrant Shrew	<i>Sorex vagrans</i>	5		
Long-tailed Vole	<i>Microtus longicaudus</i>	5		
Montane Vole	<i>Microtus montanus</i>	4		
Meadow Vole	<i>Microtus pennsylvanicus</i>	5		
North American Water Vole	<i>Microtus richardsoni</i>	4		
Southern Red-backed Vole	<i>Myodes gapperi</i>	4		
Western Heather Vole	<i>Phenacomys intermedius</i>	5		
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>	5		
American Pika	<i>Ochotona princeps</i>	3		
North American Deermouse	<i>Peromyscus maniculatus</i>	5		
Hoary Marmot	<i>Marmota caligata</i>	4	Tier 3	
Yellow-bellied Marmot	<i>Marmota flaviventris</i>	4		
Beaver	<i>Castor canadensis</i>	4		
Northern River Otter	<i>Lontra canadensis</i>	4		
Common Muskrat	<i>Ondatra zibethicus</i>	4		
Northern Pocket Gopher	<i>Thomomys talpoides</i>	5		
North American Porcupine	<i>Erethizon dorsatum</i>	5		
Snowshoe Hare	<i>Lepus americanus</i>	3		
Northern Raccoon	<i>Procyon lotor</i>	5		

Table 4. Endangered, Threatened, State Sensitive, and Ranked Plants

Common Name	Scientific Name	State Status	SCGN	INPS Status	Federal Status
White Sand Verbena	<i>Abronia mellifera</i>	1, 2		Rare	
Sweetflag	<i>Acorus americanus</i>	2		Rare	
Woodland Agrimony	<i>Agrimonia striata</i>	1		Rare	
Columbia Onion	<i>Allium columbianum</i>	3		Rare	
Candystick	<i>Allotropa virgata</i>	3			
Bog-rosemary	<i>Andromeda polifolia</i>	1			
Bog-rosemary	<i>Andromeda polifolia</i> var. <i>polifolia</i>	1		Rare	
Thimbleweed	<i>Anemone cylindrica</i>	1		Rare	
Northern Sagewort	<i>Artemisia campestris</i> ssp. <i>borealis</i> var. <i>purshii</i>	1			
Maidenhair Spleenwort	<i>Asplenium trichomanes</i>	1		Rare	
Green Spleenwort	<i>Asplenium trichomanes</i> - <i>ramosum</i>	1			

Common Name	Scientific Name	State Status	SCGN	INPS Status	Federal Status
Bourgeau's Milkvetch	<i>Astragalus bourgovii</i>	1		Rare	
Least Bladdery Milkvetch	<i>Astragalus microcystis</i>	H		Rare	
Payson's Milkvetch	<i>Astragalus paysonii</i>	3			
Swamp Birch	<i>Betula pumila</i>	2?		Rare	
Beck's Water-marigold	<i>Bidens beckii</i>	1			
Deer-fern	<i>Blechnum spicant</i>	3		Rare	
Triangular-lobed Moonwort	<i>Botrychium ascendens</i>	1		Rare	
Crenulate Moonwort	<i>Botrychium crenulatum</i>	1		Rare	
Lance-leaved Moonwort	<i>Botrychium lanceolatum</i> <i>var. lanceolatum</i>	3			
Linear-Leaved Moonwort	<i>Botrychium lineare</i>	H		Rare	
Michigan Moonwort	<i>Botrychium michiganense</i>	1		Rare	
Mingan Moonwort	<i>Botrychium minganense</i>	3			
Mountain Moonwort	<i>Botrychium montanum</i>	2			
Peculiar Moonwort	<i>Botrychium paradoxum</i>	1		Rare	
Stalked Moonwort	<i>Botrychium pedunculosum</i>	1		Rare	
Northern Moonwort	<i>Botrychium pinnatum</i>	2			
Least Moonwort	<i>Botrychium simplex</i>	2			
Aleutian Brome	<i>Bromus sitchensis</i> <i>var. aleutensis</i>	1		Rare	
Wild Morning Glory	<i>Calystegia sepium</i> <i>ssp. angulata</i>	2		Rare	
Constance's Bittercress	<i>Cardamine constancei</i>	3		Rare	
Abrupt Sedge	<i>Carex abrupta</i>	3		Rare	
California Sedge	<i>Carex californica</i>	2		Rare	
String-root Sedge	<i>Carex chordorrhiza</i>	2, 3		Rare	
Bristly Sedge	<i>Carex comosa</i>	2		Rare	
Cordilleran Sedge	<i>Carex cordillerana</i>	2		Rare	
Yellow Sedge	<i>Carex flava</i>	3		Rare	
Arctic Hare's-foot Sedge	<i>Carex lachenalii</i>	1			
Lake-bank Sedge	<i>Carex lacustris</i>	1		Rare	
Bristle-stalked Sedge	<i>Carex leptalea</i>	3		Rare	
Pale Sedge	<i>Carex livida</i>	3		Rare	
Poor Sedge / Boreal Bog Sedge	<i>Carex magellanica</i> <i>ssp. irrigua</i>	2, 3		Rare	
Pale Sedge	<i>Carex pallescens</i>	1		Rare	
Many-headed Sedge	<i>Carex sychnocephala</i>	1		Rare	
Mertens' Mountain Heather	<i>Cassiope mertensiana</i> <i>ssp. mertensiana</i>	2		Rare	
Phantom Orchid	<i>Cephalanthera austini</i>	3		Rare	

Common Name	Scientific Name	State Status	SCGN	INPS Status	Federal Status
Bulb-bearing Waterhemlock	<i>Cicuta bulbifera</i>	2			
Palouse Thistle	<i>Cirsium brevifolium</i>	2		Rare	
Case's Corydalis	<i>Corydalis caseana</i> ssp. <i>hastata</i>	3		Rare	
Cocks-comb Cat's-eye	<i>Cryptantha celosioides</i>	3			
Clustered Lady's-slipper	<i>Cypripedium fasciculatum</i>	3		Rare	
Small Yellow Lady's-slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	1			
Plume Moss	<i>Dendroalsia abietina</i>	H		Rare	
Alpine Clubmoss	<i>Diphasiastrum alpinum</i>	1		Rare	
White Shooting-star	<i>Dodecatheon dentatum</i>	3		Rare	
Bloom Peak Douglasia	<i>Douglasia conservatorum</i>	1		Rare	
Yellowstone Draba	<i>Draba incerta</i>	2			
Crested Shield-fern	<i>Dryopteris cristata</i>	2, 3		Rare	
Slender Spike-rush	<i>Eleocharis elliptica</i>	1			
Swamp Willow-weed	<i>Epilobium palustre</i>	3			
Giant Helleborine	<i>Epipactis gigantea</i>	2, 3		Rare	
Narrowleaf Cotton-grass	<i>Eriophorum angustifolium</i> ssp. <i>angustifolium</i>	3		Rare	
Green Keeled Cotton-grass	<i>Eriophorum viridicarinatum</i>	2		Rare	
Flat-top Fragrant-goldenrod	<i>Euthamia graminifolia</i>	1		Rare	
Creeping Snowberry	<i>Gaultheria hispidula</i>	2		Rare	
Common Bluecup	<i>Githopsis specularioides</i>	1		Rare	
Howell's Gumweed	<i>Grindelia howellii</i>	1			
Grassleaf Mud-plantain	<i>Heteranthera dubia</i>	1		Rare	
Bearded Golden Aster	<i>Heterotheca barbata</i>	H		Rare	
Northern Sweet Grass	<i>Hierochloa hirta</i>	2		Rare	
Water Howellia	<i>Howellia aquatilis</i>	1		Rare	Delisted
Large Canadian St. John's-wort	<i>Hypericum majus</i>	3		Rare	
Tweedy's Ivesia	<i>Ivesia tweedyi</i>	2		Rare	
Southern Mudwort	<i>Limosella acaulis</i>	2			
Brunsfeld's Lomatium	<i>Lomatium brunsfeldianum</i>	1		Rare	
Basalt Desert-Parsley	<i>Lomatium filicinum</i>	3			
Packard's Desert-parsley	<i>Lomatium packardiae</i>	2			
Many-fruit False-loosestrife	<i>Ludwigia polycarpa</i>	1			
Northern Bog Clubmoss	<i>Lycopodiella inundata</i>	2		Rare	
Groundpine	<i>Lycopodium dendroideum</i>	2		Rare	

Common Name	Scientific Name	State Status	SCGN	INPS Status	Federal Status
Sitka Clubmoss	<i>Lycopodium sitchense</i>	2			
False Lily-of-the-Valley	<i>Maianthemum dilatatum</i>	1		Rare	
Chickweed Monkeyflower	<i>Mimulus alsinoides</i>	1			
Bank Monkeyflower	<i>Mimulus clivicola</i>	3			
Stalk-leaved Monkeyflower	<i>Mimulus patulus</i>	3			
Naked Bishop's-cap	<i>Mitella nuda</i>	1		Rare	
Leiberg's Water-lily	<i>Nymphaea leibergii</i>	X		Rare	
Pine Broomrape	<i>Orobanche pinorum</i>	2		Rare	
Trillium-leaved Wood-sorrel	<i>Oxalis trilliifolia</i>	1		Rare	
Arrowleaf Coltsfoot	<i>Petasites sagittatus</i>	3			
Idaho Phacelia	<i>Phacelia idahoensis</i>	3		Rare	
Northern Beechfern	<i>Phegopteris connectilis</i>	2			
Soft Phlox	<i>Phlox mollis</i>	2, 3		Rare	
White Spruce	<i>Picea glauca</i>	1			
Whitebark Pine	<i>Pinus albicaulis</i>	3		Rare	Candidate
Alaska Bluegrass	<i>Poa paucispicula</i>	1		Rare	
Braun's Sword-fern	<i>Polystichum braunii</i>	2		Rare	
Drummond's Cinquefoil	<i>Potentilla drummondii</i>	2		Rare	
Slender Woolly-heads	<i>Psilocarphus tenellus</i>	2			
Northern Naugehyde Liverwort	<i>Ptilidium ciliare</i>	?		Rare	
Arctic Buttercup	<i>Ranunculus gelidus</i>	1			
White Beakrush	<i>Rhynchospora alba</i>	3		Rare	
Red-flowered Currant	<i>Ribes sanguineum</i>	1			
Winter Currant	<i>Ribes sanguineum</i> var. <i>sanguineum</i>	1		Rare	
Wolf's Currant	<i>Ribes wolfii</i>	2			
Sitka Mistmaiden	<i>Romanzoffia sitchensis</i>	2			
Salmonberry	<i>Rubus spectabilis</i>	3		Rare	
Hoary Willow	<i>Salix candida</i>	2			
Bog Willow	<i>Salix pedicellaris</i>	2			
False Mountain Willow	<i>Salix pseudomonticola</i>	1			
Black Snake-root	<i>Sanicula marilandica</i>	3		Rare	
Pod Grass	<i>Scheuchzeria palustris</i>	3		Rare	
Water Clubrush	<i>Schoenoplectus</i> <i>subterminalis</i>	3		Rare	
Northwestern Yellow-flax	<i>Sclerolinon digynum</i>	H		Rare	
Rock Stonecrop	<i>Sedum rupicolum</i>	2			

Common Name	Scientific Name	State Status	SCGN	INPS Status	Federal Status
Western Ladies' Tresses	<i>Spiranthes porrifolia</i>	1		Rare	
Kruhsea	<i>Streptopus streptopoides</i>	3		Rare	
Hapeman's Sullivantia	<i>Sullivantia hapemanii</i> var. <i>hapemanii</i>	2			
Rush Aster	<i>Symphyotrichum boreale</i>	2			
Leiberg's Tauschia	<i>Tauschia tenuissima</i>	3		Rare	
Large Fringe-cup	<i>Tellima grandiflora</i>	2		Rare	
American Wood Sage	<i>Teucrium canadense</i> var. <i>occidentale</i>	2			
Purple Meadow-rue	<i>Thalictrum dasycarpum</i>	1		Rare	
Short-style Tofieldia	<i>Triantha occidentalis</i> ssp. <i>brevistyla</i>	1			
Hudson's Bay Bulrush	<i>Trichophorum alpinum</i>	1		Rare	
Mountain Bluecurls	<i>Trichostema oblongum</i>	H		Rare	
Arctic Starflower	<i>Trientalis europaea</i>	3			
Northern Starflower	<i>Trientalis europaea</i> ssp. <i>arctica</i>	3			
Western Starflower	<i>Trientalis latifolia</i>	3			
Douglas' Clover	<i>Trifolium douglasii</i>	1		Rare	
Humped Bladderwort	<i>Utricularia gibba</i>	1		Rare	
Northern Bladderwort	<i>Utricularia ochroleuca</i>	1		Rare	
Bog Cranberry	<i>Vaccinium oxycoccos</i>	3		Rare	
Tapegrass	<i>Vallisneria americana</i>	1			
Great-spurred Violet	<i>Viola selkirkii</i>	1			
Northern Woodland Violet	<i>Viola septentrionalis</i>	1		Rare	
Idaho Strawberry	<i>Waldsteinia idahoensis</i>	3		Rare	

Table 5. Endangered, Threatened, State Sensitive, and Ranked Reptiles and Amphibians

Common Name	Scientific Name	State Status	SGCN	Federal Status
Northern Alligator Lizard	<i>Elgaria coerulea</i>	4		
Common Garter Snake	<i>Thamnophis sirtalis</i>	4		
Northern Rubber Boa	<i>Charina bottae</i>	5		
Western Terrestrial Garter Snake	<i>Thamnophis elegans</i>	5		
Western Groundsnake	<i>Sonora semiannulata</i>	3		
North American Racer	<i>Coluber constrictor</i>	5		
Painted Turtle	<i>Chrysemys picta</i>	3		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Columbia Spotted Frog	<i>Rana luteiventris</i>	4		
Rocky Mountain Tailed Frog	<i>Ascaphus montanus</i>	3		
Northern Leopard Frog	<i>Rana pipiens</i>	2	Tier 2	
Coeur d'Alene Salamander	<i>Plethodon idahoensis</i>	3		
Long-toed Salamander	<i>Ambystoma macrodactylum</i>	5		
Western Skink	<i>Eumeces skiltonianus</i>	4		
Western Toad	<i>Anaxyrus boreas</i>	2	Tier 2	
Sierran Treefrog	<i>Pseudacris sierra</i>	5		

Table 6. Endangered, Threatened, State Sensitive, and Ranked Insects

Common Name	Scientific Name	State Status	SGCN	Federal Status
A Mayfly	<i>Acentrella insignificans</i>	5		
A Mayfly	<i>Acentrella turbida</i>	5		
Fingered Dagger Moth	<i>Acronicta dactylina</i>	5		
Funerary Dagger Moth	<i>Acronicta funeralis</i>	4		
Gray Dagger Moth	<i>Acronicta grisea</i>	3		
A Moth	<i>Adelphagrotis indeterminata</i>	4		
Milbert's Tortoiseshell	<i>Aglais milberti</i>	5		
A Ground Beetle	<i>Agonum errans</i>	2		
A Moth	<i>Agrochola purpurea</i>	4		
A Moth	<i>Agrotis vancouverensis</i>	4		
Common Roadside-skipper	<i>Amblyscirtes vialis</i>	4		
A Caddisfly	<i>Amiocentrus aspilus</i>	5		
Common Green Darner	<i>Anax junius</i>	5		
A Moth	<i>Annaphila diva</i>	3		
Polyphemus Moth	<i>Antheraea polyphemus</i>	5		
A Wool Carder Bee	<i>Anthidium mormonum</i>	5		
A Wool Carder Bee	<i>Anthidium utahense</i>	5		
Pacific Orangetip	<i>Anthocharis sara</i>	5		
Yellow-headed Cutworm Moth	<i>Apamea amputatrix</i>	5		
Thoughtful Apamea Moth	<i>Apamea cogitata</i>	5		
Glassy Cutworm Moth	<i>Apamea devastator</i>	5		
An Apamea Moth	<i>Apamea scoparia</i>	5		
Great Tiger Moth	<i>Arctia caja</i>	5		
A Caddisfly	<i>Arctopsyche grandis</i>	4		
A Moth	<i>Aseptis binotata</i>	5		
Alfalfa Looper Moth	<i>Autographa californica</i>	5		
Shaded Gold Spot	<i>Autographa metallica</i>	4		
A Mayfly	<i>Baetis bicaudatus</i>	4		

Common Name	Scientific Name	State Status	SGCN	Federal Status
A Mayfly	<i>Baetis flavistriga</i>	5		
A Mayfly	<i>Baetis tricaudatus</i>	5		
A March Fly	<i>Bibio albipennis</i>	5		
Peppered Moth	<i>Biston betularia</i>	4		
Meadow Fritillary	<i>Boloria bellona</i>	3		
Pacific Fritillary	<i>Boloria epithore</i>	4		
Silver-bordered Fritillary	<i>Boloria selene</i>	4		
White-shouldered Bumble Bee	<i>Bombus appositus</i>	4		
Two-form Bumble Bee	<i>Bombus bifarius</i>	5		
Central Bumble Bee	<i>Bombus centralis</i>	5		
Yellow Bumble Bee	<i>Bombus fervidus</i>	5	Tier 3	
Yellow Head Bumble Bee	<i>Bombus flavifrons</i>	5		
Brown-belted Bumble Bee	<i>Bombus griseocollis</i>	5		
Hunt's Bumble Bee	<i>Bombus huntii</i>	5	Tier 3	
Indiscriminate Cuckoo Bumble Bee	<i>Bombus insularis</i>	4		
Orange-rumped Bumble Bee	<i>Bombus melanopygus</i>	4		
Fuzzy-horned Bumble Bee	<i>Bombus mixtus</i>	5		
Nevada Bumble Bee	<i>Bombus nevadensis</i>	5		
Western Bumble Bee	<i>Bombus occidentalis</i>	3	Tier 1	
Red-belted Bumble Bee	<i>Bombus rufocinctus</i>	5		
Sitka Bumble Bee	<i>Bombus sitkensis</i>	3		
Suckley's Cuckoo Bumble Bee	<i>Bombus suckleyi</i>	2	Tier 1	
Forest Bumble Bee	<i>Bombus sylvicola</i>	5		
Half-black Bumble Bee	<i>Bombus vagans</i>	4		
A Caddisfly	<i>Brachycentrus americanus</i>	5		
A Caddisfly	<i>Brachycentrus occidentalis</i>	5		
Western Stone	<i>Calineuria californica</i>	5		
Western Green Hairstreak	<i>Callophrys affinis</i>	5		
Brown Elfin	<i>Callophrys augustinus</i>	5		
Western Pine Elfin	<i>Callophrys eryphon</i>	5		
Sheridan's Green Hairstreak	<i>Callophrys sheridanii</i>	4		
Thicket Hairstreak	<i>Callophrys spinetorum</i>	4		
Clear-winged Grasshopper	<i>Camnula pellucida</i>	5		
A Carpenter Ant	<i>Camponotus herculeanus</i>	4		
Civil Rustic Moth	<i>Caradrina montana</i>	5		
Red Girdle Moth	<i>Caripeta aequaliaria</i>	5		
Arctic Skipper	<i>Carterocephalus palaemon</i>	5		
Briseis Underwing	<i>Catocala briseis</i>	3		
White Underwing	<i>Catocala relictata</i>	3		
Semirelict Underwing	<i>Catocala semirelictata</i>	3		
A Mayfly	<i>Caudatella edmundsi</i>	4		
A Mayfly	<i>Caudatella heterocaudata</i>	4		

Common Name	Scientific Name	State Status	SGCN	Federal Status
A Mayfly	<i>Caudatella hystrix</i>	4		
Western Azure	<i>Celastrina echo</i>	4		
Small Wood-Nymph	<i>Cercyonis oetus</i>	5		
Common Wood-Nymph	<i>Cercyonis pegala</i>	5		
Western Sculptured Pine Borer	<i>Chalcophora angulicollis</i>	4		
Pine Needle Scale	<i>Chionaspis pinifoliae</i>	4		
Conchuela	<i>Chlorochroa ligata</i>	4		
Northern Checkerspot	<i>Chlosyne palla</i>	5		
Marsh Meadow Grasshopper	<i>Chorthippus curtipennis</i>	5		
A Caddisfly	<i>Chyranda centralis</i>	5		
Boreal Long-lipped Tiger Beetle	<i>Cicindela longilabris</i>	5		
Western Tiger Beetle	<i>Cicindela oregona</i>	5		
Bronzed Tiger Beetle	<i>Cicindela repanda</i>	5		
Shortwing Stone	<i>Claassenia sabulosa</i>	5		
Common Ringlet	<i>Coenonympha tullia</i>	5		
Queen Alexandra's Sulphur	<i>Colias alexandra</i>	5		
Christina Sulphur	<i>Colias christina</i>	3		
Orange Sulphur	<i>Colias eurytheme</i>	5		
Pink-edged Sulphur	<i>Colias interior</i>	5		
Pelidne Sulphur	<i>Colias pelidne</i>	3		
Clouded Sulphur	<i>Colias philodice</i>	5		
Western Tailed-blue	<i>Cupido amyntula</i>	4		
Eastern Tailed-blue	<i>Cupido comyntas</i>	4		
Monarch	<i>Danaus plexippus</i>	2	Tier 3	Candidate
Short-horned Click Beetle	<i>Danosoma brevicorne</i>	5		
Grizzled Tussock Moth	<i>Dasychira grisea</i>	3		
Smooth Needlefly	<i>Despaxia augusta</i>	4		
A Caddisfly	<i>Dicosmoecus atripes</i>	4		
Shadowy Arches Moth	<i>Drasteria adumbrata</i>	3		
A Moth	<i>Drasteria ochracea</i>	3		
A Mayfly	<i>Drunella doddsii</i>	4		
A Mayfly	<i>Drunella grandis</i>	5		
A Mayfly	<i>Drunella spinifera</i>	4		
Dark Marbled Carpet Moth	<i>Dysstroma citrata</i>	5		
Tule Bluet	<i>Enallagma carunculatum</i>	5		
Marsh Bluet	<i>Enallagma ebrium</i>	5		
Silver-spotted Skipper	<i>Epargyreus clarus</i>	5		
A Mayfly	<i>Epeorus deceptivus</i>	4		
A Mayfly	<i>Epeorus grandis</i>	4		
A Mayfly	<i>Epeorus longimanus</i>	4		
A Mayfly	<i>Ephemerella alleni</i>	2	Tier 2	
A Mayfly	<i>Ephemerella tibialis</i>	5		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Common Alpine	<i>Erebia epipsodea</i>	5		
Afranius Dusky Wing	<i>Erynnis afranius</i>	5		
Dreamy Duskywing	<i>Erynnis icelus</i>	5		
Pacuvius Duskywing	<i>Erynnis pacuvius</i>	4		
Persius Duskywing	<i>Erynnis persius</i>	3		
Salt Marsh Moth	<i>Estigmene acrea</i>	5		
Variegated Checkerspot	<i>Euphydryas chalcedona</i>	5		
Edith's Checkerspot	<i>Euphydryas editha</i>	5		
Gillette's Checkerspot	<i>Euphydryas gillettii</i>	2	Tier 3	
Dun Skipper	<i>Euphyes vestris</i>	5		
A Thyatirid Moth	<i>Euthyatira semicircularis</i>	3		
A Moth	<i>Euxoa intrita</i>	4		
Dingy Cutworm Moth	<i>Feltia jaculifera</i>	5		
An Ant	<i>Formica neorufibarbis</i>	5		
Western Thatching Ant	<i>Formica obscuripes</i>	5		
Silvery Blue	<i>Glaucopsyche lygdamus</i>	5		
Arrowhead Blue	<i>Glaucopsyche piasus</i>	5		
Police Car Moth	<i>Gnophaela vermiculata</i>	3		
Lettered Habrosyne Moth	<i>Habrosyne scripta</i>	3		
Northern White-skipper	<i>Heliopetes ericetorum</i>	4		
Oregon Gem Moth	<i>Heliothis oregonica</i>	4		
A Leech	<i>Helobdella stagnalis</i>	5		
A Sphinx Moth	<i>Hemaris thetis</i>	2		
Elegant Sheepmoth	<i>Hemileuca eglanterina</i>	5		
Western Branded Skipper	<i>Hesperia colorado</i>	5		
Juba Skipper	<i>Hesperia juba</i>	5		
Nevada Skipper	<i>Hesperia nevada</i>	4		
Golden Stone	<i>Hesperoperla pacifica</i>	5		
A Caddisfly	<i>Hesperophylax designatus</i>	5		
Sulphur Moth	<i>Hesperumia sulphuraria</i>	5		
A Riffle Beetle	<i>Heterlimnius corpulentus</i>	4		
Ceanothus Silkmoth	<i>Hyalophora euryalus</i>	4		
Galium Sphinx Moth	<i>Hyles gallii</i>	2		
White-lined Sphinx Moth	<i>Hyles lineata</i>	3		
A Moth	<i>Hyppa brunneicrista</i>	4		
A Moth	<i>Lacinipolia comis</i>	4		
A Moth	<i>Lacinipolia pensilis</i>	5		
A Moth	<i>Lacinipolia stricta</i>	5		
An Ant	<i>Lasius alienus</i>	5		
An Ant	<i>Lasius neoniger</i>	4		
An Ant	<i>Lasius pallitarsis</i>	4		
Lorquin's Admiral	<i>Limenitis lorquini</i>	5		
Western Field Wireworm	<i>Limonius ectypus</i>	5		
A Click Beetle	<i>Limonius fulvipilis</i>	5		

Common Name	Scientific Name	State Status	SGCN	Federal Status
A Click Beetle	<i>Limenius nitidulus</i>	5		
A Moth	<i>Lithophane georgii</i>	4		
Nameless Pinion Moth	<i>Lithophane innominata</i>	4		
Spotted Tussock Moth	<i>Lophocampa maculata</i>	5		
A Moth	<i>Lygephila victoria</i>	4		
Western Tent Caterpillar Moth	<i>Malacosoma californicum</i>	5		
Forest Tent Caterpillar Moth	<i>Malacosoma disstria</i>	5		
Two-striped Grasshopper	<i>Melanoplus bivittatus</i>	5		
Red-legged Grasshopper	<i>Melanoplus femurrubrum</i>	5		
A Spur-throat Grasshopper	<i>Melanoplus foedus</i>	5		
Packard Grasshopper	<i>Melanoplus packardii</i>	5		
Migratory Grasshopper	<i>Melanoplus sanguinipes</i>	5		
Spur-throated Grasshopper Species Group	<i>Melanoplus Species Group</i>	2Q	Tier 3	
White-dotted Prominent Moth	<i>Nadata gibbosa</i>	4		
Filament Bearer	<i>Nematocampa resistaria</i>	4		
Pine White Butterfly	<i>Neophasia menapia</i>	5		
A Caddisfly	<i>Neophylax rickeri</i>	5		
Mourning Cloak	<i>Nymphalis antiopa</i>	5		
California Tortoiseshell	<i>Nymphalis californica</i>	5		
Compton Tortoiseshell	<i>Nymphalis l-album</i>	4		
Garita Skipperling	<i>Oarisma garita</i>	5		
Woodland Skipper	<i>Ochlodes sylvanoides</i>	5		
Chryxus Arctic	<i>Oeneis chryxus</i>	4		
A Cicada	<i>Okanagana annulata</i>	5		
A Cicada	<i>Okanagana bella</i>	5		
A Cicada	<i>Okanagana fratercula</i>	5		
A Cicada	<i>Okanagana occidentalis</i>	5		
A Cicada	<i>Okanagana vanduzeei</i>	5		
A Mason Bee	<i>Osmia bruneri</i>	3		
Orchard Mason Bee	<i>Osmia lignaria</i>	5		
Modest Sphinx	<i>Pachysphinx modesta</i>	5		
Cascades Panthea	<i>Panthea virginarius</i>	3		
Blind-eyed Sphinx Moth	<i>Paonias excaecata</i>	5		
Pale Swallowtail	<i>Papilio eurymedon</i>	5		
Western Tiger Swallowtail	<i>Papilio rutulus</i>	5		
Anise Swallowtail	<i>Papilio zelicaon</i>	5		
A Caddisfly	<i>Parapsyche elsis</i>	4		
Clodius Parnassian	<i>Parnassius clodius</i>	4		
Rocky Mountain Parnassian	<i>Parnassius smintheus</i>	4		
Northern Scorpion	<i>Paruroctonus boreus</i>	5		
Ruby Tiger Moth	<i>Phragmatobia fuliginosa</i>	4		

Common Name	Scientific Name	State Status	SGCN	Federal Status
Northern Crescent	<i>Phyciodes cocyta</i>	5		
Mylitta Crescent	<i>Phyciodes mylitta</i>	5		
Pale Crescent	<i>Phyciodes pallida</i>	4		
Field Crescent	<i>Phyciodes pulchella</i>	5		
Lappet Moth	<i>Phyllodesma americana</i>	5		
Autumn Springfly	<i>Pictetiella expansa</i>	2		
Margined White	<i>Pieris marginalis</i>	4		
St. Lawrence Tiger Moth	<i>Platarctia parthenos</i>	4		
A Cicada	<i>Platypedia areolata</i>	5		
Ranchman's Tiger Moth	<i>Platyprepia virginalis</i>	5		
Boisduval's Blue	<i>Plebejus icarioides</i>	4		
Northern Blue	<i>Plebejus idas</i>	4		
Lupine Blue	<i>Plebejus lupini</i>	4		
Melissa Blue	<i>Plebejus melissa</i>	5		
Greenish Blue	<i>Plebejus saepiolus</i>	4		
Stormy Arches Moth	<i>Polia nimbosa</i>	3		
Polia Moth	<i>Polia piniae</i>	5		
Draco Skipper	<i>Polites draco</i>	4		
Long Dash	<i>Polites mystic</i>	4		
Peck's Skipper	<i>Polites peckius</i>	4		
Sandhill Skipper	<i>Polites sabuleti</i>	5		
Green Comma	<i>Polygonia faunus</i>	5		
Hoary Comma	<i>Polygonia gracilis</i>	5		
Clark's Day Sphinx Moth	<i>Proserpinus clarkiae</i>	3		
Banded Forestfly	<i>Prostoia besametsa</i>	4		
Tufted Thyatirid Moth	<i>Pseudothyatira cymatophoroides</i>	4		
A Caddisfly	<i>Psychoglypha bella</i>	4		
A Caddisfly	<i>Psychoglypha subborealis</i>	5		
Giant Salmonfly	<i>Pteronarcys californica</i>	5		
Common Checkered-skipper	<i>Pyrgus communis</i>	4		
Two-banded Checkered Skipper	<i>Pyrgus ruralis</i>	5		
Isabella Tiger Moth	<i>Pyrrharctia isabella</i>	4		
A Mayfly	<i>Rhithrogena robusta</i>	4		
A Caddisfly	<i>Rhyacophila alberta</i>	4		
A Caddisfly	<i>Rhyacophila angelita</i>	5		
A Caddisfly	<i>Rhyacophila brunnea</i>	5		
A Caddisfly	<i>Rhyacophila coloradensis</i>	5		
A Caddisfly	<i>Rhyacophila hyalinata</i>	5		
A Caddisfly	<i>Rhyacophila narvae</i>	4		
A Caddisfly	<i>Rhyacophila pellisa</i>	4		
A Caddisfly	<i>Rhyacophila vaccua</i>	4		
A Caddisfly	<i>Rhyacophila vagrita</i>	3		

Common Name	Scientific Name	State Status	SGCN	Federal Status
A Caddisfly	<i>Rhyacophila valuma</i>	4		
A Caddisfly	<i>Rhyacophila vao</i>	5		
A Caddisfly	<i>Rhyacophila verrula</i>	4		
A Caddisfly	<i>Rhyacophila vofixa</i>	3		
Hedgerow Hairstreak	<i>Satyrium saepium</i>	4		
Sylvan Hairstreak	<i>Satyrium sylvinus</i>	4		
Coral Hairstreak	<i>Satyrium titus</i>	4		
A Ground Beetle	<i>Scaphinotus marginatus</i>	4		
Herald Moth	<i>Scoliopteryx libatrix</i>	3		
A Click Beetle	<i>Selatosomus semimetallicus</i>	4		
Alberta Springfly	<i>Setvena bradleyi</i>	3		
One-eyed Sphinx	<i>Smerinthus cerisyi</i>	5		
A Sphinx Moth	<i>Smerinthus ophthalmica</i>	3		
Atlantis Fritillary	<i>Speyeria atlantis</i>	3		
Great Spangled Fritillary	<i>Speyeria cybele</i>	3		
Hydaspe Fritillary	<i>Speyeria hydaspe</i>	5		
Mormon Fritillary	<i>Speyeria mormonia</i>	5		
Zerene Fritillary	<i>Speyeria zerene</i>	4		
Wandering Tiger Moth	<i>Spilosoma vagans</i>	5		
An Ant	<i>Stenamma diecki</i>	4		
Gray Hairstreak	<i>Strymon melinus</i>	5		
Variegated Meadowhawk	<i>Sympetrum corruptum</i>	5		
Northern Cloudy Wing Skipper	<i>Thorybes pylades</i>	4		
A Mayfly	<i>Timpanoga hecuba</i>	5		
A Moth	<i>Tolyte distincta</i>	3		
A Horntail	<i>Urocerus californicus</i>	4		
Red Admiral	<i>Vanessa atalanta</i>	5		
Painted Lady	<i>Vanessa cardui</i>	5		
Cataract Forestfly	<i>Visoka cataractae</i>	4		
Lesser Black-letter Dart Moth	<i>Xestia c-nigrum</i>	5		
A Moth	<i>Xestia mustelina</i>	5		
Rosy Dart Moth	<i>Xestia oblata</i>	5		
Smith's Dart Moth	<i>Xestia smithii</i>	5		
Dot-and-Dash Swordgrass Moth	<i>Xylena curvimacula</i>	5		
Least Roachfly	<i>Yoraperla brevis</i>	4		
Common Forestfly	<i>Zapada cinctipes</i>	5		
Columbian Forestfly	<i>Zapada columbiana</i>	4		
Frigid Forestfly	<i>Zapada frigida</i>	4		
Oregon Forestfly	<i>Zapada oregonensis</i>	3		
Elder Moth	<i>Zotheca tranquilla</i>	3		

Table 7. Endangered, Threatened, State Sensitive, and Ranked Mollusks

Common Name	Scientific Name	State Status	SGCN	Federal Status
Idaho Forestsnail	<i>Allogona ptychophora</i>	4		
Banded Tigersnail	<i>Anguispira kochi</i>	5		
Glossy Pillar	<i>Cochlicopa lubrica</i>	5		
Columbia Oregonian	<i>Cryptomastix hendersoni</i>	3		
Coeur d'Alene Oregonian	<i>Cryptomastix mullani</i>	4Q	Tier 3	
A Snail	<i>Cryptomastix mullani hemphilli</i>	4		
A Snail	<i>Cryptomastix mullani mullani</i>	4		
A Snail	<i>Cryptomastix mullani olneyae</i>	4		
Kingston Oregonian	<i>Cryptomastix sanburni</i>	3	Tier 1	
Meadow Slug	<i>Deroceras laeve</i>	3		
Forest Disc	<i>Discus whitneyi</i>	4		
Brown Hive	<i>Euconulus fulvus</i>	4		
Robust Lancetooth	<i>Haplotrema vancouverense</i>	5		
Two-ridge Rams-horn	<i>Helisoma anceps</i>	3		
Pale Jumping-slug	<i>Hemphillia camelus</i>	2	Tier 3	
Skade's Jumping-slug	<i>Hemphillia skadei</i>	2Q	Tier 2	
Pygmy Slug	<i>Kootenaia burkei</i>	5		
Magnum Mantleslug	<i>Magnipelta mycophaga</i>	2	Tier 1	
Western Pearlshell	<i>Margaritifera falcata</i>	2	Tier 2	
Button Sprite	<i>Menetus opercularis</i>	4		
Spruce Snail	<i>Microphysula ingersolli</i>	4		
Amber Glass Snail	<i>Nesovitrea electrina</i>	3		
Tadpole Physa	<i>Physella gyrina</i>	5		
Western Flat-whorl	<i>Planogyra clappi</i>	1	Tier 3	
Humped Coin	<i>Polygyrella polygyrella</i>	4		
Thinlip Tightcoil	<i>Pristiloma idahoense</i>	4		
Shiny Tightcoil	<i>Pristiloma wascoense</i>	2	Tier 3	
Reticulate Taildropper	<i>Prophysaon andersoni</i>	4		
Blue-gray Taildropper	<i>Prophysaon coeruleum</i>	1Q	Tier 1	
Smoky Taildropper	<i>Prophysaon humile</i>	4		
Small Spot	<i>Punctum minutissimum</i>	4		
Conical Spot	<i>Punctum randolphi</i>	5		
Fir Pinwheel	<i>Radiodiscus abietum</i>	5		
Northwest Striate	<i>Striatura pugetensis</i>	4		
Lyre Mantleslug	<i>Udosarx lyrata</i>	3		
Silky Vallonia	<i>Vallonia cyclophorella</i>	4		
Lovely Vallonia	<i>Vallonia pulchella</i>	3		
Ovate Vertigo	<i>Vertigo ovata</i>	4		
Western Glass-snail	<i>Vitrina pellucida</i>	4		
Sheathed Slug	<i>Zacoleus idahoensis</i>	5		

Quick Gloss	<i>Zonitoides arboreus</i>	5		
Black Gloss	<i>Zonitoides nitidus</i>	5		

Common Birds

Recent surveys lead by Boise State University in conjunction with USACE have recorded over 120 species in the area (Carlisle et al. 2015).

Many birds, some of which are permanent residents, are found in and around the lake. The area is a major stopover area for migratory waterfowl in both spring and fall. Some species of waterfowl and bald eagles overwinter on the lake because the lake does not freeze over its entirety. Numerous species of birds, including upland game and birds of prey, nest near the lakeshore and the 2015 study by Boise State University provided higher quality data on the abundance, species richness, and distribution of birds on and near USACE properties.

Table 8. Bird Checklist for the lower Clark Fork River watershed, Lake Pend Oreille, and the Pend Oreille River.

Common Name	Common Name	Common Name	
Ducks, Geese, and Swans	New World Quail	American Kestrel	
Canada Goose	California Quail	Peregrine Falcon	
Greater White-fronted Goose	Loons		
Tundra Swan	Common Loon	Rails, Gallinules, and Coots	
Trumpeter Swan	Pacific Loon	Virginia Rail	
Wood Duck	Grebes	Sora	
Gadwall	Pied-billed Grebe	American Coot	
Eurasian Wigeon	Horned Grebe		
American Wigeon	Eared Grebe	Lapwings and Plovers	
Mallard	Red-necked Grebe	Killdeer	
Cinnamon Teal	Clark's Grebe	Black-bellied Plover	
Blue-winged Teal	Western Grebe		
Northern Shoveler		Avocets and Stilts	
Northern Pintail	Pelicans and their Allies	American Avocet	
Green-winged Teal	American White Pelican	Sandpipers, Phalaropes, and Allies	
Canvasback	Double-crested Cormorant		
Redhead		Spotted Sandpiper	
Ring-necked Duck	Bitterns, Herons, and Egrets	Western Sandpiper	
Lesser Scaup	American Bittern	Baird's Sandpiper	
Greater Scaup	Great Blue Heron	Pectoral Sandpiper	
Bufflehead		Dunlin	
Common Goldeneye	Ibises and Spoonbills	Wilson's Snipe	
Ruddy Duck		Red-necked Phalarope	

Common Name	Common Name	Common Name	
Hooded Merganser	New World Vultures		
Common Merganser	Turkey Vulture	Gulls, Terns, and Skimmers	
Red-breasted Merganser	Ospreys, Kites, Eagles, Hawks, and Falcons	Bonaparte's Gull	
		Ring-billed Gull	
	Northern Harrier	Mew Gull	
Partridges, Grouse, Turkeys, and Old World Quail	Osprey	California Gull	
	Bald Eagle	Herring Gull	
Ruffed Grouse	Cooper's Hawk	Caspian Tern	
Wild Turkey	Red-tailed Hawk	Common Tern	
	Swainson's Hawk		
	Merlin		
Pigeons and Doves	Common Raven	Warblers	
Rock Pigeon	Larks	Orange-crowned Warbler	
Mourning Dove	Horned Lark	Nashville Warbler	
Eurasian Collared-dove	Swallows	Townsend's Warbler	
Owls	Northern Rough-winged Swallow	Yellow Warbler	
Northern Pygmy Owl		Yellow-rumped Warbler	
Barred Owl	Tree Swallow	American Redstart	
Western Screech	Violet-green Swallow	Northern Waterthrush	
Northern Saw-whet Owl	Bank Swallow	MacGillivray's Warbler	
Great Horned Owl	Barn Swallow	Wilson's Warbler	
Great Gray	Cliff Swallow	Common Yellowthroat	
Snowy Owl			
Goatsuckers	Titmice, Chickadees, Bushtits, and Nuthatches	Sparrows, Towhees, and Juncos	
Common Nighthawk			
Swifts	Black-capped Chickadee	Spotted Towhee	
Black Swift	Chestnut-backed Chickadee	Chipping Sparrow	
Vaux's Swift	Mountain Chickadee	Savannah Sparrow	
Hummingbirds	Red-breasted Nuthatch	Lincoln's Sparrow	
Calliope Hummingbird	Brown Creeper	Song Sparrow	
Anna's Hummingbird		White-crowned Sparrow	
Black-chinned Hummingbird	Wrens	Dark-eyed Junco	
Rufous Hummingbird	Marsh Wren		
Kingfishers	Pacific Wren	Cardinals, Tanagers, and Allies	
Belted Kingfisher	House Wren		
Woodpeckers	Canyon Wren	Western Tanager	
Hairy Woodpecker		Lazuli Bunting	

Common Name		Common Name		Common Name	
Downy Woodpecker		Dippers		Black-headed Grosbeak	
Northern Flicker		American Dipper		Snow Bunting	
Pileated Woodpecker		Kinglets			
Red-naped Sapsucker		Golden-crowned Kinglet		Blackbirds	
		Ruby-crowned Kinglet		Red-winged Blackbird	
Tyrant Flycatchers		Thrushes		Brewer's Blackbird	
Western Wood-pewee		Mountain Bluebird		Yellow-headed Blackbird	
Eastern Kingbird		Townsend's Solitaire		Western Meadowlark	
Cordilleran Flycatcher		Swainson's Thrush		Brown-headed Cowbird	
Hammond's Flycatcher		Varied Thrush		Bullock's Oriole	
Dusky Flycatcher		American Robin		Pine Grosbeak	
Least Flycatcher				Red Crossbill	
Willow Flycatcher		Mockingbirds and Thrashers		Old World Sparrows	
		Gray Catbird		House Sparrow	
Shrikes and Vireos		Starlings		Finches	
Northern Shrike		European Starling		House Finch	
Cassin's Vireo				American Goldfinch	
Warbling Vireo		Wagtails and Pipits		Pine Siskin	
Red-eyed Vireo		American Pipit		Gnatcatchers and	
		Waxwings		Gnatwrens	
Crows and Jays		Bohemian Waxwing			
Black-billed Magpie		Cedar Waxwing		Longspurs and	
Clark's Nutcracker				Snowbuntings	
Steller's Jay					

Common Plants

A list of species observed upon the Project's lands during field surveys appears in Table 9. This list is not comprehensive and does not include a full survey of rare and endangered species.

Table 9. Observed Vegetation Species on Project Lands.

Scientific Name	Common Name	Scientific Name	Common Name
<i>Abies grandis</i>	Grand Fir	<i>Lilium columbianum</i>	Tiger Lily
<i>Acer glabrum</i>	Douglas Maple	<i>Lomatium dissectum</i>	Fern-leaved lomatium
<i>Acer macrophyllum</i>	Big Leaf Maple	<i>Lomatium triternatum</i>	9 leaved lomatium
<i>Achillea millefolium</i>	Yarrow	<i>Lonicera dioica</i>	Douglas honeysuckle
<i>Aconitum columbianum</i>	Monkshood	<i>Lonicera utahensis</i>	Utah Honeysuckle
<i>Adenocaulon bicolor</i>	Pathfinder	<i>Lonicera utahensis</i>	Utah honeysuckle
<i>Agropyron sp.</i>	Wheat Grass	<i>Lupinus sericeus</i>	Lupine
<i>Agrostis sp.</i>	Bentgrass	<i>Luzula piperi</i>	Wood rush
<i>Allium sp.</i>	Onion	<i>Lysichitum americanum</i>	Skunk Cabbage
<i>Alnus sinuata</i>	Sitka Alder	<i>Myosotis sylvatica</i>	Forget Me Not
<i>Amelanchier alnifolia</i>	Serviceberry	<i>Osmorhiza chilensis</i>	Sweet Cicely
<i>Antennaria racemosa</i>	Wooley Pussy Toes	<i>Oxalis suksdorfii</i>	Wood Sorrel
<i>Aralia nudicaulis</i>	Sarsparilla	<i>Phalaris arundinaceae</i>	Reed Canary Grass
<i>Arctium lappa</i>	Burdock	<i>Philadelphus lewisii</i>	Mockorange
<i>Arnica cordifolia</i>	Heart leaved arnica	<i>Phlox caespitosa</i>	Phlox
<i>Asarum caudatum</i>	Wild Ginger	<i>Physocarpus malvaceus</i>	Mallow Ninebark
<i>Aster scopulorum</i>	Purple Aster	<i>Pinus contorta</i>	Lodgepole Pine
<i>Athyrium filix-femina</i>	Lady Fern	<i>Pinus monticola</i>	Western White Pine
<i>Balsamorhiza sagittata</i>	Arrowleaf balsamroot	<i>Pinus ponderosa</i>	Ponderosa Pine
<i>Berberis aquifolium</i>	Tall Oregon Grape	<i>Populus balsamifera</i>	Black Cottonwood
<i>Betula papyrifera</i>	Paper Birch	<i>Populus tremuloides</i>	Quaking Aspen
<i>Bromus rigidus</i>	Weedy Brome	<i>Potentilla gracilis</i>	Cinquefoil
<i>Bromus vulgaris</i>	Wide blade hairy grass	<i>Prunus emarginata</i>	Bittercherry
<i>Calamagrostis rubescens</i>	Pine Grass	<i>Prunus virginiana</i>	Choke cherry

Scientific Name	Common Name		Scientific Name	Common Name
<i>Carex aperta</i>	Columbia sedge		<i>Pseudotsuga menziesii</i>	Douglas-fir
<i>Ceanothus velutinus</i>	Greasewood			
<i>Ceanothus velutinus</i>	Shinyleaf Ceanothus		<i>Pteridium aquilinum</i>	Bracken Fern
<i>Centaurea maculosa</i>	Knapweed		<i>Ranunculus sp.</i>	Buttercup
<i>Chimaphila umbellata</i>	Pipsissewa		<i>Rhamnus alnifolia</i>	Buckthorn
<i>Clematis columbiana</i>	Columbia clamatis		<i>Rosa gymnocarpa</i>	Baldhip Rose
<i>Clintonia uniflora</i>	Queen cup beadlily		<i>Rosa woodsii</i>	Pearhip Rose
<i>Collinsia parviflora</i>	Blue-eyed Mary		<i>Rubus parviflorus</i>	Western Thimbleberry
<i>Coptis occidentalis</i>	Western goldthread		<i>Rubus ursinus</i>	Trailing blackberry
<i>Corallorhiza maculata</i>	Coralroot		<i>Salix scouleriana</i>	Scouler Willow
<i>Cornus stolonifera</i>	Red-osier Dogwood		<i>Sambucus racemosa</i>	Red Elderberry
<i>Crataegus douglasii</i>	Black Hawthorn		<i>Sedum lanceolatum</i>	Sedum
<i>Cystopteris fragilis</i>	Brittle bladder-fern		<i>Sedum roseum</i>	Sedum
<i>Dactylis glomerata</i>	Orchard Grass		<i>Smilacina racemosa</i>	False Solomon's seal
<i>Disporum hookeri</i>	Hooker fairy-bell		<i>Smilacina stellata</i>	Starry Solomon-seal
<i>Disporum trachycarpum</i>	Wartberry fairy-bell		<i>Sorbus sitchensis</i>	Sitka Mountain-ash
<i>Dodecatheon jeffreyi</i>	Jeffrey's shooting star		<i>Spiraea betulifolia</i>	White spiraea
<i>Echinochloa crusgalli</i>	Grass no ligule		<i>Spiraea douglasii</i>	Spiraea
<i>Elymus glaucus</i>	Blue Wildrye		<i>Stellaria media</i>	Chickweed
<i>Epilobium angustifolium</i>	Fireweed		<i>Streptopus amplexifolius</i>	Starflower twisted-stalk
<i>Equisetum arvense</i>	Field Horsetail		<i>Symphoricarpos albus</i>	Snowberry
<i>Equisetum hyemale</i>	Tall horsetail		<i>Tanacetum vulgare</i>	Tansey
<i>Erythronium grandiflorum</i>	Avalanche Lily		<i>Taraxacum officinale</i>	Dandelion
<i>Festuca arundinaceae</i>	Fescue		<i>Thalictrum occidentale</i>	Meadowrue
<i>Fragaria vesca</i>	Wood Strawberry		<i>Thuja plicata</i>	Western Redcedar
<i>Fragaria virginiana</i>	Strawberry		<i>Tiarella trifoliata</i>	Foam Flower
<i>Gallium triflorum</i>	Gallium		<i>Trifolium pratense</i>	Red Clover
<i>Gaultheria humifusa</i>	Western Wintergreen		<i>Trillium ovatum</i>	Trillium
<i>Geum macrophyllum</i>	Geum		<i>Tsuga heterophylla</i>	Western Hemlock

Scientific Name	Common Name		Scientific Name	Common Name
<i>Haracleum lanatum</i>	Cow Parsnip		<i>Vaccinium caespitosum</i>	Huckleberry
<i>Heuchera sp.</i>	Alumroot		<i>Vaccinium ovalifolium</i>	Oval-leaf Huckleberry
<i>Hieracium albertinum</i>	Hawkweed non hairy		<i>Vicia americana</i>	Vetch
<i>Holodiscus discolor</i>	Ocean-spray		<i>Viola adunca</i>	Purple violet
<i>Impatiens noli-tangere</i>	Impatiens		<i>Viola glabella</i>	Woodland Violet
<i>Juniperus scopulorum</i>	Rocky mountain juniper		<i>Zigadenus elegans</i>	Death Camas
<i>Larix occidentalis</i>	Western Larch		<i>Zigadenus venenosus</i>	Death Camas

Forest Habitat Types in Northern Idaho

Northern Idaho's forest vegetation presents a complex array in composition and structure. To facilitate effective management of these lands, a classification is needed to reduce the diversity to a reasonable number of units. Natural classifications, in contrast to technical classifications of specific applicability such as timber types or cover types, are based on natural relationships and have a broad application, serving a multiplicity of management needs. Natural classifications such as habitat types (Daubenmire and Daubenmire 1968) reflect ecological patterns and thus accommodate the greatest number of applications (Cooper et al. 1991). Rather than extrapolate from classifications of adjacent areas or work with data-deficient, local, informally revised classifications, a decision was made to refine the Daubenmire classification method. To this end a cooperative study was initiated in 1980 between the Northern Region U.S. Department of Agriculture, U.S. Forest Service, and the Intermountain Research Station.

From analysis of data collected from multiple site visits the following forest communities (as described in Cooper et al. (1991) were either found to be currently present on the USACE lands, or likely to be the future climax community of other open canopy forested lands:

- Western Redcedar/Lady Fern (*Thuja plicata* / *Athyrium filix-femina*)
- Western Redcedar/Queencup Beadlily (*Thuja plicata* / *Clintonia uniflora*)
- Western Hemlock/Queencup Beadlily (*Tsuga heterophylla* / *Clintonia uniflora*)
- Grand Fir/Queencup Beadlily (*Abies grandis* / *Clintonia uniflora*)
- Grand Fir/Ninebark (*Abies grandis* / *Physocarpus malvaceus*)
- Grand Fir/Ninebark (Goldthread phase) (*Abies grandis* / *Physocarpus malvaceus*)
- Douglas Fir (*Pseudotsuga menziesii*)
- Douglas Fir/Ninebark (*Pseudotsuga menziesii* / *Physocarpus malvaceus*)
- Douglas Fir/Common Snowberry (*Pseudotsuga menziesii* / *Symphoricarpos albus*)
- Ponderosa Pine/Common Snowberry (*Pinus ponderosa* / *Symphoricarpos albus*)

Western Redcedar/Lady Fern (*Thuja plicata*/*Athyrium filix-femina*)

These sites are consistently very species rich. Lady fern (*Athyrium filix-femina*), with a coverage of generally 5 percent or more and a stature generally more than 3 feet (1 meter), is diagnostic of this habitat type. Species commonly also encountered are pathfinder (*Adenocaulon bicolor*), wild ginger (*Asarum caudatum*), queencup beadlily (*Clintonia uniflora*), goldthread (*Coptis occidentalis*), and foamflower (*Tiarella trifoliata*). This habitat type provides habitat for bird foraging and nesting (such as warblers, chickadees, thrushes, woodpeckers, owls, grouse), small mammals (such as squirrels, mice, woodrats, bats), and large mammals (such as deer, elk) when a shrub understory is present.

Western Redcedar/Queencup Beadlily (*Thuja plicata*/*Clintonia uniflora*)

This habitat type is characterized by self-sustaining populations of western red cedar (*T. plicata*) and an understory containing queencup beadlily (*Clintonia uniflora*), goldthread (*Coptis occidentalis*), or foamflower (*Tiarella trifoliata*). Wild ginger and wood violet (*Viola glabella*), if present, only occur on isolated moist microsites within the stand. This habitat type provides habitat for bird nesting and foraging (such as warblers, thrushes, owls, woodpeckers) and small mammals (such as woodrats, squirrels, bats) with its many snags. When a shrub understory is present deer and elk browse on it heavily.

Western Hemlock/Queencup Beadlily (*Tsuga heterophylla*/*Clintonia uniflora*)

Seral species that may dominate early successional stages include Douglas fir, western larch (*Larix occidentalis*), western white pine (*Pinus monticola*), ponderosa pine (*Pinus ponderosa*), and lodgepole pine (*Pinus contorta*). Associated shrub and herbaceous species include Utah honeysuckle (*Lonicera utahensis*), baldhip rose (*Rosa gymnocarpa*), twinflower (*Linnaea borealis*), huckleberry (*Vaccinium sp.*), queencup beadlily, and foamflower. Western hemlock forest is one of the more widespread climax forests in northern Idaho and provides habitat for bird nesting and foraging (such as thrushes, chickadees, warblers, owls, woodpeckers).

Grand Fir/Queencup Beadlily (*Abies grandis*/*Clintonia uniflora*)

Grand fir (*Abies grandis*), in addition to being the climax dominant, is a major dominant of seral stages, even following clearcutting or severe wildfire. Undergrowth is characterized by the presence of Queencup beadlily and a variable assemblage of moist-site herbs, including starry Solomon-seal (*Smilacina stellata*), bedstraw (*Galium triflorum*), goldthread (*Coptis occidentalis*), grass (*Bromus vulgaris*), Hooker fairy-bell (*Disporum hookeri*), and pathfinder (*Adenocaulon bicolor*). Typical shrubs are western thimbleberry (*Rubus parviflorus*), baldhip rose (*Rosa gymnocarpa*), honeysuckle (*Lonicera utahensis*), huckleberry and twinflower. Similar to the cedar forests, birds and small mammals are the main wildlife present. Only limited understory is present to provide browse for large mammals.

Grand Fir/Ninebark (*Abies grandis*/*Physocarpus malvaceus*)

While grand fir is the dominant climax species, lodgepole pine (*Pinus contorta*), western larch (*Larix occidentalis*), white pine (*Pinus monticola*), Douglas fir (*Pseudotsuga menziesii*) and

ponderosa pine (*Pinus ponderosa*) can be present in significant numbers in this habitat type. Undergrowth is primarily a variable combination of ninebark (*Physocarpus malvaceus*), ocean spray (*Holodiscus discolor*), Rocky Mountain maple (*Acer glabrum*), snowberry (*Symphoricarpos albus*), service berry (*Amelanchier alnifolia*), and creeping Oregon grape (*Berberis repens*). Forbs include twisted stalk (*Smilacina stellata*), bedstraw (*Galium triflorum*), Piper's anemone (*Anemone piperi*), American trailplant (*Adenocaulon bicolor*), and wide-blade hairy grass (*Bromus vulgaris*). This habitat type provides habitat for birds nesting and foraging and small mammals. More deer browse is available because shrubs are often widespread in this habitat type.

Goldthread Phase. In the goldthread phase of the grand fir/ninebark habitat type, the shrub layer is much reduced and forbs are the dominant understory, primarily goldthread (*Coptis occidentalis*). This habitat type provides limited habitat for large mammals.

Douglas-fir/Ninebark (*Pseudotsuga menziesii*/*Physocarpus malvaceus*)

Ponderosa pine (*Pinus ponderosa*) is the major seral tree species in this habitat type; some sites can support western larch (*Larix occidentalis*). The climax community is a closed forest, with canopy cover ranging from 70 percent to over 100 percent. The understory shrub layer is dominated by ninebark (*Physocarpus malvaceus*) and/or oceanspray (*Holodiscus discolor*). Other commonly found shrubs in this habitat type are serviceberry (*Amelanchier alnifolia*), mockorange (*Philadelphus lewisii*), baldhip rose (*Rosa gymnocarpa*), white spiraea (*Spiraea betulifolia*), and snowberry (*Symphoricarpos albus*). This habitat type provides bird nesting and foraging habitat (such as for warblers, thrushes, chickadees, woodpeckers, owls, grouse), small mammals, and large mammals. The mixed ponderosa pine and Douglas fir forests support high densities of herbivores (Sallabanks et al. 2001).

Douglas-fir/Common Snowberry (*Pseudotsuga menziesii*/*Symphoricarpos albus*)

Ponderosa pine (*Pinus ponderosa*) is the major seral tree species and often codominates with Douglas fir (*Pseudotsuga menziesii*) in mature stands. Shrub species, normally low in total coverage, are usually represented by snowberry (*Symphoricarpos albus*), white spiraea (*Spiraea betulifolia*), serviceberry (*Amelanchier alnifolia*), baldhip rose (*Rosa gymnocarpa*), and Oregon grape (*Berberis repens*). The herbaceous layer tends to be rather sparse, with wheat grass (*Agropyron spicatum*), pine grass (*Calamagrostis rubescens*), Columbia sedge (*Carex geyeri*), and associated herbs. This habitat type provides excellent habitat for small mammals.

Ponderosa Pine/Common Snowberry (*Pinus ponderosa*/*Symphoricarpos albus*)

Sparse ponderosa pine and low shrubs dominate this habitat type. Snowberry (*Symphoricarpos albus*), white spiraea (*Spiraea betulifolia*), Oregon grape (*Berberis repens*), and roses (*Rosa spp.*) are typical dominants. Some sites may have black hawthorn (*Crataegus douglasii*), bitter cherry (*Prunus emarginata*), choke cherry (*P. virginiana*), serviceberry (*Amelanchier alnifolia*), and/or cascara (*Rhamnus purshiana*) as a tall shrub layer. The herbaceous undergrowth of the habitat type is usually sparse and lacking in species diversity, although disturbed sites of this habitat type often have rampant populations of exotic herbs. This habitat type provides habitat for small mammals, squirrels, birds, and woodpeckers and excellent browse for deer.

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Appendix D

BEST MANAGEMENT PRACTICES

Best Management Practices

Best management practices (BMPs) will be incorporated into proposed AFD Project actions, as appropriate. Some are integrated into the work, while others are guides to operation and care of equipment.

- a. Conduct work during daylight hours only.
- b. Install temporary erosion control measures for all phases of work. As construction advances, installation of silt fencing will occur along the full length of disturbed area of the project site. Use additional erosion control measures as needed to prevent the discharge or accumulation of sediment into the water, wetlands, adjacent swales, catch basins, storm drains, and offsite. Monitor accumulation of sediment in adjacent swales or storm drains daily and clear accumulation to ensure continued service throughout construction.
- c. Confine all construction impacts to the minimum area necessary to complete the project and boundaries of clearing limits associated with site access. The construction site boundaries will be clearly marked to avoid or minimize disturbance of riparian vegetation, wetlands, and other sensitive sites.
- d. Refueling of equipment and vehicles must occur on uplands or at least 100 feet away from ordinary highwater mark and flagged wetland boundaries.
- e. Take provisions to prevent pollutants from reaching the soil, groundwater, or surface water. During project activities, contractors will be required to perform daily inspections of equipment, maintain appropriate spill-containment materials on site, and store all fuels and other materials in appropriate containers.
- f. Equipment maintenance activities shall not be conducted on the construction site unless a proper staging area has been established for this purpose.
- g. Equipment used near the water will be cleaned prior to construction.
- h. At least one fuel spill kit with absorbent pads will be onsite at all times and staff trained on its use.
- i. Drive trains of equipment will not operate in the water.
- j. Use biodegradable hydraulic fluids in machinery where appropriate.
- k. Use environmentally acceptable lubricants composed of biodegradable base oils such as vegetable oils, synthetic esters, and polyalkylene glycols in equipment operated in or near the water.
- l. Verify and flag the landward delineated boundary of wetlands during the growing season and before construction.
- m. Install high-visibility construction fencing landward of flagged wetland boundaries prior to excavation.
- n. Install silt fencing and straw waddles, or an equivalent erosion control measure, upslope of the delineated wetlands.

- o. The pre-construction meeting with the contractor will include a USACE biologist. Outside resource agencies or the project sponsor may also be present. A USACE biologist will review BMPs with the contractor and verify high-visibility construction fencing is present around wetlands.
- p. A USACE biologist will be on site during construction that is within 100 feet of any wetland boundary and will remain available upon request for consultation during construction.
- q. The excavator arm will be swung landward of construction near wetlands (or otherwise not over the wetland) to avoid discharges into or near wetlands.
- r. No in-water work shall occur other than work covered in the Clean Water Act 401 Certification or other environmental compliance documents for the project.
- s. All plantings (willows, shrubs, and trees) will be watered at the time of installation during the construction period and as required by the project planting plan.
- t. Dispose of noxious weeds separately from other organic materials at an approved off-site location.
- u. Cover all disturbed soils with topsoil and hydroseed with a locally native seed mix.
- v. Remove all trash and unauthorized fill from the project and staging area when construction is complete.
- w. Any tree felling, clearing, and grubbing will be avoided between 1 March and 30 July to avoid impacts to nesting birds.
- x. If native woody riparian vegetation must be removed for temporary access purposes, the vegetation must be cut flush with the ground surface or folded over. The root mass must be left intact, and any exposed soil must be reseeded with native grasses or forbs after construction is completed.
- y. If any archaeological artifacts and/or cultural features are found anytime during construction activities excavation, all construction must immediately cease in that location. Any construction activities that may affect the archaeological artifacts and/or cultural features must not occur until approved by the Project Manager and Cultural Resources Coordinator.
- z. Flag and preserve existing milkweed patches, where identified, and require staff or contractors to recognize and screen milkweed for Monarch Butterfly (*Danaus plexippus*) caterpillars or chrysalides prior to disturbance.

Appendix E

HAZARD TREES

Hazard Trees

Hazard tree management within the recreation areas is an ongoing activity directed at reducing the incidence of tree failure and mitigating injury to the public and damage to infrastructure. As the recreation sites are located within forested areas, the hazard tree program is part of the vegetation management plan for each park. Although it is anticipated that work done in accordance with the vegetation management plans will reduce the time and effort spent in tree evaluation on a sustained basis, it will in no way obviate the need for a continual hazard tree program.

Until the fall of 1988, the hazard tree program consisted of removing those trees that were dead or had other obvious deficiencies. In the fall of 1988, a major tree removal program was conducted in the recreation areas based on information provided by the USFS and the Forest Resource Section, USACE. The following table is the number of trees of all sizes and species removed through the hazard tree program during the last 25 years in 5-year time blocks (Table 1). These numbers do not reflect incidental tree removal from some maintenance activities or some new facilities installation.

Table 1. Hazard trees removed 1991-2023.

Recreation Area	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2023	Totals
Albeni Cove	52	44	46	45	52	108	347
Vista	14	53	88	22	21	7	205
Priest River	39	54	53	88	128	181	543
Springy Point	166	176	136	209	122	196	1005
Riley Creek	302	137	156	203	109	228	1135
Trestle Creek	No records kept			1	13	13	27

Annual Tree Survey

Tree analysis is conducted at least once a year. Each individual tree is surveyed for evidence of root rot, butt disease, stem decay, insect infestation, physical damage, etc., that may compromise the stability of the tree. If any indicators are found, a determination is made as to the extent and the probability that the tree would hit a target in the event of failure (risk rating), and the extent of damage expected based on the size of the tree. If it is determined that the tree merits removal based on the defects and potential for damage, the tree is marked, and a record of the tree and its defect(s) is made.

The probability of a defective tree hitting a person or property is the primary factor in determining whether the tree needs to be removed. Trees may be removed to prevent root damage to buildings, roads, and paths. In several sites within the recreation areas, defective trees are left standing to provide for wildlife values and aesthetics. In other words, the fact that a tree has a defect does not mean that it merits immediate removal. The exception to this is in the case of insect attacks. Heavy attacks that were obviously successful indicate a need for tree

removal to reduce the impact of insects on neighboring trees. In addition, heavy infestation by certain insects will eventually kill the target tree.

Removal of Hazard Trees

Prior to the recreation areas (parks) spring reopening for drive-in public use, hazard trees marked for removal are felled by a licensed contractor. Depending on timber the number of trees marked for removal, as well as the need for general thinning for overall forest health, tree removal may be achieved through a timber sale or a contract-for-services. Felled trees, or parts of trees, may be used within the recreation area to be utilized as habitat enhancement, traffic barriers (vehicular or foot), or left for firewood. Insect infested trees are removed from site to help prevent further spread of the infestation, thus helping to secure forest health.

Appendix F

PERTINENT PUBLIC LAWS, POLICIES, AND PROCEDURES

Pertinent Public Laws

All project-related actions and policies must comply with Federal laws and regulations. Such regulations may include, but not be limited to:

- a. Rivers and Harbors Act of 1899
- b. Antiquities Act of 1906
- c. Migratory Bird Treaty Act of 1918
- d. The Historic Sites Act of 1935
- e. Fish and Wildlife Coordination Act of 1934
- f. Bald and Golden Eagle Act of 1940
- g. Flood Control Act of 1944 (PL 78-534)
- h. Flood Control Act of 1950 (PL 81-516)
- i. The Reservoir Salvage Act of 1960
- j. Forest Cover Act of 1960
- k. The National Historic Preservation Act of 1966
- l. National Environmental Policy Act of 1969
- m. Endangered Species Act of 1973
- n. The Water Resource Development Act of 1974, Sec. 77
- o. The Archeological and Historical Data Conservation Act of 1974
- p. Safe Drinking Water Act of 1974
- q. Federal Land Policy and Management Act of 1976
- r. The Clean Water Act of 1977
- s. The Archeological Resources Protection Act of 1979
- t. The Emergency Wetlands Resources Act of 1986
- u. The North American Wetlands Conservation Act of 1989
- v. Native American Graves Protection and Repatriation Act of 1990
- w. Americans with Disabilities Act of 1990, ADA Amendments Act of 2008
- x. Preservation of American Antiquities Act, Jan. 2008, as amended
- y. Executive Order (EO) 11593: Protection and Enhancement of the Cultural Environment May 1971
- z. EO 11988: Floodplain Management, May 1977
- aa. EO 11990: Protection of Wetlands, May 1977, as amended
- bb. EO 13112: Invasive Species, Feb. 1999, as amended
- cc. EO 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, Jan 2001
- dd. Code of Federal Regulations (CFR), Title 33, Part 325: Processing of Department of the Army permits; Procedures for the Protection of Historic Properties, November 1986
- ee. CFR, Title 36, Parks, Forests, and Public Property
 - a. 36 CFR Part 60: National Historic Preservation Act of 1966, as amended
 - b. 36 CFR Part 61: Procedures for State, Tribal, and Local Government Historic Preservation Programs, March 1999
 - c. 36 CFR Part 63: Determinations of Eligibility for Inclusion in the National Register of Historic Places, Sept. 1977, as amended
 - d. 36 CFR Part 327: Rules and Regulations Governing Public Use of USACE Water Resource Development Projects, Sept. 1985

- e. 36 CFR Part 800: Protection of Historic and Cultural Properties, incorporating amendments effective Aug. 2004)
- ff. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants, Sept. 1975, as amended
- gg. Sec. 1 (42 U.S.C 1856a): Reciprocal Fire Protection Act of 1955
- hh. AR 190-29: Misdemeanors and Uniform Violation Notices Referred to U.S. Magistrates, 20 August 1984
- ii. Federal Highway Administration. 2009. Manual on Uniform Traffic Control Devices. Revisions numbers 1 and 2 incorporated, May 2012.

Policies and Procedures Publications

General policies and procedures for the planning, design, operation, and maintenance of recreation facilities at USACE civil works projects are provided in engineer manuals, regulations, and pamphlets listed below. These publications guide the development of recreational facilities to ensure they are of the highest quality and serve the health, safety, and enjoyment of the visiting public.

- a. EM 385-1-1, *Safety and Health Requirements Manual*, 15 March 2024
- b. EM 1110-1-400, *Engineering and Design Recreation Facility and Customer Services Standards*, 1 November 2004
- c. EM 1110-2-410, *Design of Recreation Areas and Facilities – Access and Circulation*, 31 December 1982
- d. EP 310-1-6, *Graphic Standards Manual* 1 September 1994
- e. ER 1130-2-401, *Visitor Center Program*, 15 February 1991
- f. ER 1130-22-400, *Management of Natural Resources and Outdoor Recreation at Civil Works Water Resources Projects*, Chapter 1, 1 June 1986
- g. ER 1165-2-400, *Recreation Planning, Development, and Management Policies*, 9 August 1985
- h. ER 1110-2-400, *Design of Recreation Sites, Areas and Facilities*, 31 May 1968

Appendix G

SEAPLANE OPERATIONS AT CIVIL WORKS WATER RESOURCES
DEVELOPMENT PROJECTS

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers, Seattle District
4735 East Marginal Way South
Seattle, Washington, 98134-2385

CENWS-OD-TS

PROJECT OPERATIONS

Seaplane Operations at Civil Works Water Resource Development Projects

1. Reference: Title 36 Code of Federal Regulations (CFR) Part 328, Regulation of Seaplane Operations at Civil Works Water Resource Development Projects Administered by the Chief of Engineers (42 FR 220, 15 November 1977).
2. Purpose: This policy is in response to an increase in public interest expressed by private seaplane operators who desire to land their personal aircraft on waters held in fee inside the boundaries that make up the Seattle District. Restrictions and guidelines for landings and takeoffs will apply to Lake Pend Oreille (Albeni Falls Dam) in Idaho, Lake Koocanusa (Libby Dam) in Montana, and Rufus Woods Lake (Chief Joseph Dam) in central Washington. Landings and takeoffs are prohibited at Mud Mountain Dam (White River), Lake Washington Ship Canal, and on the (Eagle River Gorge) Howard Hansen Dam.
3. Scope: This new policy is for the purpose of defining the rules which in conjunction with Title 36, Chapter III Section 36 CFR 327.4 and 36 CFR 328 govern the operation of seaplanes upon waters classified or zoned as 'Fee Simple' by the Federal Government within Seattle District. All appropriate State and Federal aviation laws apply to aircraft operations upon or over project lands and waters.
4. Definitions: A seaplane is an aircraft registered with the Federal Aviation Administration and equipped with pontoons for the purpose of landing on or taking off from water. After landing on the water, seaplanes are considered marine vessels and must adhere to the rules and regulations described under the provisions of Coast Guard Rule 18 (d) and Federal Aviation Regulation 91.115. On the water, all seaplanes and their operators shall keep well clear of all vessels and avoid impeding their navigation.
5. Authority by individual project:
 - a. Albeni Falls Dam and reservoir, authorized by Public Law 81-516 (81st Cong, 2nd Sess.) and the Flood Control Act of 1950.

Seaplane takeoff and landing maneuvers are allowed no earlier than 30 minutes before sunrise and no later than 30 minutes after sunset.

Takeoffs and landings are prohibited within 500 feet of any bridge, causeway, overhead power line, dock, dam, or similar structure including 500 feet from the shorelines at Riley Creek, Priest River, Albeni Cove, Springy Point, and Trestle Creek recreation areas. In an emergency situation, pilots may land inside the 500 foot buffer. Sea planes are prohibited from mooring to any public courtesy boat dock.

b. Chief Joseph Dam and reservoir, authorized by Public Law 82-469 (82nd Cong, 2nd Sess), July 9, 1952. Seaplane takeoff and landing maneuvers are allowed no earlier than 30 minutes before sunrise and no later than 30 minutes after sunset on Rufus Woods Lake. Takeoff and landing maneuvers are prohibited ½ mile from Chief Joseph Dam and the Powerhouse. Pilots are to remain 500 feet from all terrestrial and floating structures, trash booms, buildings, ports, bridges, towers, and utility lines. Pilots may land and take off 300 feet from the shores that make up Rufus Woods Lake.

c. Libby Dam and reservoir, authorized by Public Law 81-516 (81st Cong, 2nd Sess) and the Flood Control Act of 1950. Seaplane takeoff and landing maneuvers are allowed no earlier than 30 minutes before sunrise and no later than 30 minutes after sunset. Takeoff and landing maneuvers are prohibited within 500 feet of any bridge, causeway, overhead power line, dock, dam, or similar structure. Pilots may land and take off 300 feet from the shores of Lake Koocanusa.

d. Lake Washington Ship Canal, authorized by House Document (HD) 953, 60th Congress, 1st Session of 1908, authorized on June 25, 1910 to construct a double lock dam and accessory works at the entrance to Salmon Bay and to dredge a channel from the locks to deepwater in the Puget Sound and a channel from the locks to Lake Washington. The Seattle Police Department and the City of Seattle have placed a restriction speed on all vessels operating on Salmon Bar or around the Lake Washington Ship Canal of 7 knots or 8.055 miles per hour. The Seattle Municipal Code SMC 16.20.130 discusses the 7 knot restriction code placed on the referenced waters. Seaplane takeoff is not possible based on this regulation.

e. Howard Hanson Dam or Eagle Gorge Reservoir was authorized under Public Law 81-516, Rivers and Harbors Act of 1950. Additional water storage was authorized in Section 101(b)(15) of the Water Resources Development Act of 1999 (Public Law 106-53). The city of Tacoma is the purveyor of municipal drinking water from the Green River. Howard Hanson Dam and all waters that make up the reservoir are closed to the general public. Pursuant to WAC 246-290-690 access to the reservoir by seaplane is prohibited.

Any person accessing the controlled areas of the Green River Watershed for recreational purposes by land, water, or air will be issued a Watershed Trespass Incident Report and will be subject to being issued a King County Trespass Citation. (See Green River Watershed Management Plan, Volume II, 2008).

f. Mud Mountain Dam and reservoir was authorized by the Flood Control Act of June 22, 1936, 74th Congress, 2nd session. Under the provisions of the Flood Control Act of 1938, operation and maintenance of the completed project is responsibility of the Corps of Engineers. Mud Mountain Dam is operated solely for flood control as the main unit of the more comprehensive Puyallup River. Reference the Mud Mountain Dam Operational Management Plan dated 1964, Section 2.04 (The Mud Mountain Dam project is operated without a conservation pool).

The reservoir contains water during flood periods only and is emptied immediately when the flood has receded. During the fall, winter, and spring, the reservoir elevation fluctuates widely and often at a rapid rate making it unsafe for public use).

6. District prohibitions and restrictions:

a. Pilots are responsible for knowing the rules and regulations pertaining to aircraft as set forth in the Title 36 CFR 327.4 and CFR 328, U.S. Army Corps of Engineers Title 36, Chapter III, Section 327.4, and Title 36 Code of Federal Regulations, Part 328 dated 15 November 1977. Copies are available from any Corps of Engineers lake office or by writing the Public Affairs Office at 4735 East Marginal Way South, Seattle, Washington 98134-2385.

b. Seaplane takeoff and landing maneuvers are allowed no earlier than 30 minutes before sunrise and no later than 30 minutes after sunset.

c. Where not specifically restricted or prohibited, operating recreational seaplanes are allowed seven days a week.

d. Commercial seaplane operations are prohibited unless authorized by the District Engineer in writing.

e. No landings or take offs are permitted inside no-wake areas.

f. On the water, all seaplanes must be in conformance with U.S. Coast Guard boating safety requirements (Coast Guard Pamphlet CG-290; 46 CFR parts 25,30; and 33 CFR part 175).

g. Operation of seaplanes is limited to recreational purposes only.

h. The operator must remain in the vicinity of the seaplane and be reasonably available to relocate the seaplane if necessary. Planes left unattended longer than 24 hours will be presumed to have been abandoned and may be impounded.

i. Seaplane landings and take offs on Lake Pend Oreille, Rufus Woods Lake, or Lake Koocanusa are performed at the risk of the planes owner, operator, and passenger(s). These lakes are operated as flood control/hydropower reservoirs with fluctuating pool elevations. Pilots are encouraged to contact the lake project office(s) prior to flying for current lake elevations. Addresses and phone numbers for each lake are provided in the documents enclosed.

j. There are no mooring facilities for seaplanes. Pilots may moor their personal aircraft on shorelines open to the general public. Tying off to trees is prohibited. When approaching shorelines to moor, the taxi speed is restricted to 5 mph.

k. Prior to using any designated public boat launching ramp, the seaplane operator must have written permission from the Operations Project Manager or the District Engineer. This includes all nautical seaplanes or planes with retractable landing gear.

7. Take-off and landing restrictions:

a. Within 500 feet of all terrestrial and floating structures (e.g., ports, buildings, bridges, towers, utility lines, substations, buoys, and docks).

b. Within ½ mile of Chief Joseph Dam on Rufus Woods Lake.

c. Within 500 feet of Libby Dam on Lake Koocanusa.

d. Bonner County Ordinance 3-601 restricts that area of the Pend Oreille River extending from Albeni Falls Dam downriver to a distance of one thousand feet (1000') and that area of the Pend Oreille River extending from Albeni Falls Dam upriver to a line fifty feet (50') upriver of the Burlington Northern-Santa Fe Railroad Bridge (bridge number 249).

c. On Rufus Woods Lake in Washington and Lake Koocanusa in Montana, pilots must remain at least 300 feet from all Corps of Engineer recreational areas including marinas, boat launches, and swim beaches.

d. On Lake Pend Oreille in Idaho planes, must remain 500 feet from shorelines bordering recreation areas when landing.

e. Landing a seaplane within 100 feet of a vessel, water skier, swimmer, or scuba diver is prohibited at Lake Pend Oreille, Rufus Woods Lake, and Lake Koocanusa.

f. Seaplanes are prohibited from landing at Mud Mountain Dam (White River), Howard Hanson Dam (Eagle Gorge Reservoir), and Lake Washington Ship Canal.

Attachments :

Appendix A Albeni Falls Dam
Appendix B Chief Joseph Dam
Appendix C Libby Dam

APPENDIX A

Albeni Falls Dam (Lake Pend Oreille)



Albeni Falls Dam
2376 East Highway 2
Oldtown, ID 83822
Phone: 208-437-3133

APPENDIX B

Chief Joseph Dam (Rufus Woods Lake)



Chief Joseph Dam
PO Box 1120
Bridgeport, WA 98813
Phone: 509-686-2225

APPENDIX C

Libby Dam (Lake Koocanusa)



Libby Dam Project Office
17877 Mountain Highway 37
Libby, MT 59923
Phone: 406-293-7751

CENWS-OD-TS

MEMORANDUM THRU Operations Division (CENWS-OD)

FOR Commander, Seattle District

SUBJECT: Regulation of Seaplane Operations at Civil Works Water Resource Development Projects

1. Request approval to implement Seaplane Operations at Civil Works Water Resource Development Projects policy (enclosed). This policy outlines policy for take-offs and landings near Seattle District projects.
2. The point of contact for this policy is Mr. John Derby, Natural Resource Specialist, Natural Resource Management Section, (206) 764-3754 or john.e.derby@usace.army.mil.

3 Encls

1. Figure, Albeni Falls Dam
2. Figure, Chief Joseph Dam
3. Figure, Libby Dam
4. Seaplane Operations Policy

JAMES R. JACOBSON
Chief, Natural Resources Management
Section

Approved/Disapproved

JOHN G. BUCK
COL, EN
Commanding

DISTRIBUTION:

ALBENI FALLS DAM (CENWS-OD-AF) (w/encls)
CHIEF JOSEPH DAM (CENWS-OD-CJ) (w/encls)
LIBBY DAM (CENWS-OD-LD) (w/encls)
LAKE WASHINGTON SHIP CANAL (CENWS-OD-LW) (w/encls)
HOWARD HANSON DAM (CENWS-OD-HH) (w/encls)
MUD MOUNTAIN DAM (CENWS-OD-MM) (w/encls)