

LOWER GRANITE LOCK AND DAM MASTER PLAN

2018



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

U.S. Army Corps of Engineers
Walla Walla District
2018

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Table of Acronyms

ADA	Americans with Disabilities Act
BPA	Bonneville Power Administration
BRZ	boat restricted zone
cfs	cubic feet per second
Colville	Confederated Tribes of the Colville Reservation
Corps	U.S. Army Corps of Engineers
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
District	Walla Walla District
EM	Engineer Manual
EO	Executive Order
EP	Engineer Pamphlet
ER	Engineer Regulation
FCRPS	Federal Columbia River Power System
FONSI	Finding of No Significant Impact
HEP	Habitat Evaluation Procedures
HMU	habitat management unit
IDFG	Idaho Fish and Game
IDPR	Idaho Department of Parks and Recreation
IPMP	Integrated Pest Management Program
JFF	Juvenile Fish Facility
LSRFWCP	Lower Snake River Fish and Wildlife Compensation Plan
MRM	Multiple Resource Management
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRHP	National Register of Historic Places
NRM	Natural Resource Management
OMBIL	Operation and Maintenance Business Information Link
OMP	Operational Management Plan
PIT	passive integrated transponder
PL	Public Law
Project	Lower Granite Lock and Dam
PSMP	Programmatic Sediment Management Plan
RSW	removable spillway weir
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Office
USFS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WRDA	Water Resources Development Act
Yakama	The Confederated Tribes and Bands of the Yakama Nation



PREFACE

The Lower Granite Master Plan was first approved in 1974. There have been six supplemental changes since that time, but no formal revisions. The majority of the changes in the current plan reflects new resource objectives, a new land classification system that updates 1974 classifications, and documentation of land classification changes between 1974 and present day. This plan also includes changes in land classification that were made in conjunction with a multidisciplinary team and input from the public.

The format for this plan is outlined in Engineer Pamphlet 1130-2-550 (Corps 1996b), revised January 2013, which sets forth policy and procedure to be followed in preparation and revision of project master plans.

The Master Plan is intended to serve as a guide for the orderly and coordinated development, management, and stewardship of all lands, facilities, and water resources of Lower Granite Lock and Dam (Project). This plan is an overarching framework for the more detailed Operational Management Plan, which is developed after the Master Plan is completed and updated annually.

The 2018 Master Plan presents an inventory of land resources and how they are classified, existing park facilities, an analysis of resource use, anticipated influences on Project operation and management, and an evaluation of future needs. It presents data on changes from 1974 to present conditions, anticipated recreational use, sensitive resources requiring protection, and mitigation requirements under the Lower Snake River Fish and Wildlife Compensation Plan (Corps 1975a).





SECTION 1. INTRODUCTION

This document is the Lower Granite Lock and Dam Master Plan (Master Plan) for management of the lands and associated recreational, natural, and cultural resources of Lower Granite Lock and Dam (also referred to as the Project throughout the rest of the document). Master plans are required for civil works projects and other fee-owned lands for which the U.S. Army Corps of Engineers (Corps) Walla Walla District (District) has administrative responsibility for management. Section 1 identifies the authorized purposes and provides a description of Lower Granite Lock and Dam and provides information about the scope, goals, and planning processes of this Master Plan.

1.1 PROJECT AUTHORIZATION

The first formal proposal by Congress for the improvement of the Snake River for navigation and other purposes was made in 1902. This was followed by other actions, notably in 1910 and 1935, eventually leading to the River and Harbor Act of 1945 (Public Law [PL] 79-14), which authorized construction of a series of dams on the reach of Snake River downstream from Lewiston, Idaho. House Document 531, Eighty-First Congress, Second Session, dated March 20, 1950, proposed a four-dam plan with Lower Granite as the last (or most upstream) unit of the four dams. Construction funds for Lower Granite Lock and Dam were first appropriated under Public Law 89-16, dated April 30, 1965. The main dam structure and installation of the first three power-generating units was complete in 1975. A legislative history for the Project is provided in **Appendix A**, Legislative History of Lower Granite Lock and Dam.

1.2 AUTHORIZED PURPOSES

The purposes of Lower Granite Lock and Dam, as originally authorized by Congress, include navigation, hydroelectric power, and incidental irrigation, with fish and wildlife and recreation added later as additional purposes. The Master Plan does not address the authorized purposes of navigation, hydroelectric power, or incidental irrigation.

1.2.1 Navigation, Hydroelectric Power, Incidental Irrigation

The River and Harbor Act of 1945 provides authority for original Project purposes of navigation, hydroelectric power, and incidental irrigation. The Flood Control Act of 1944 (PL 78-534) provides authority to contract for use

of surplus water for domestic, municipal, and industrial purposes.

- **Navigation** – The Lower Granite navigation lock is the last of eight locks encountered in the Columbia-Snake Inland Waterway, a 465-mile river highway that allows barge transport of commodities between the Pacific Ocean and Lewiston, Idaho. The navigation channel is maintained at a depth of 14 feet and a width of 250 feet at the minimum operating pool (MOP).

- **Hydroelectric Power** – Lower Granite Dam has six 135-megawatt turbines, for a total generating capacity of 810 megawatts. Power generation from the lower Snake River dams are integrated into the Bonneville Power Administration (BPA) transmission grid. The lower Snake River dams provide necessary voltage regulation to help keep the overall power system reliable.

- **Incidental Irrigation** – The Lower Granite Lock and Dam is a run-of-river dam, which means it does not store/collect water for irrigation purposes. However, the reservoir created by the dam provides incidental irrigation benefits by making access and use of the existing water easier for persons with a valid water right issued by the State of Washington.

1.2.2 Recreation

Section 4 of the Flood Control Act of 1944, as amended in 1946 and 1954 and by Section 207 of the 1962 Flood Control Act (PL 87-874), is the basic authority for the initial recreation development on Lower Granite Lake.

The Corps is the leading Federal provider of outdoor recreation. As host to 370 million visitors per year, the Corps plays a major role in meeting the Nation’s outdoor recreation needs. Popular recreation activities around Lower Granite Lock and Dam include fishing, swimming, picnicking,

boating, hunting, and camping. There are several day-use areas, campsites, parks, HMUs, boat launch facilities, and marinas. A full description of recreation facilities are detailed in Chapter 5, classified under low density and high density recreation.

1.2.3 Fish and Wildlife

The Fish and Wildlife Coordination Act of 1958 (PL 85-624) provides authority to modify projects for conservation of fish and wildlife. Its terms and provisions are fully applicable to construction and development of Lower Granite Lock and Dam. Under the guidance of this law, the various proposals and concepts set forth in this Master Plan have been, and will continue to be, coordinated with the fish and wildlife agencies.

The Lower Snake River Fish and Wildlife Compensation Plan (LSRFWCP) was authorized by the Water Resource Development Act (WRDA) of 1976, Section 102, PL 94-587 (October 1976). It was amended by WRDA 1986, Section 856, PL 99-662 (November 1986), to increase project cost. It was also amended by WRDA 2007, Section 3165, PL 110-114, to add woody riparian vegetation restoration to the plan.

The LSRFWCP was initiated to provide mitigation for fish and wildlife losses caused by the construction of Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Locks and Dams on the Snake River in Washington and Idaho.

As originally authorized, the plan was divided into two parts: fisheries compensation and wildlife compensation. Fisheries compensation centered on fish propagation facilities and providing fisherman access along tributary streams. The wildlife compensation involved on-project lands habitat development, off-project habitat acquisition, and the purchase and release

of game farm birds (pheasants). More detailed information relating to Lower Granite Lock and Dam lands associated with the LSRFWCP can be found in Chapters 4, Land Classification; Chapter 5, Resource Plan; and Chapter 6, Special Topics.

1.3 PURPOSE AND SCOPE OF THE LOWER GRANITE MASTER PLAN

The Lower Granite Master Plan is a strategic land use document that guides the comprehensive management and development of all Project recreational, natural, and cultural resources throughout the life of the Project. This Master Plan guides and articulates Corps responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources at the Project. It is dynamic and flexible, based on changing conditions. The Master Plan focuses on overarching

management goals and objectives. Details of design, management and administration, and implementation are addressed in another document, the Lower Granite Operational Management Plan (OMP), which is a 5-year management plan that details information required to implement the concepts described in the Master Plan. Neither the OMP nor the Master Plan addresses regional water quality, water management, or the operation and maintenance of Project operations facilities such as Lower Granite Lock and Dam. The public has an opportunity to comment on actions taken under the OMP through the National Environmental Policy Act (NEPA) process prior to project implementation.

The Master Plan was developed with consideration of regional and local needs, resource capabilities and suitability, and expressed public interests consistent with authorized Project purposes and regulations.



Figure 1-1. Lower Granite Lock and Dam

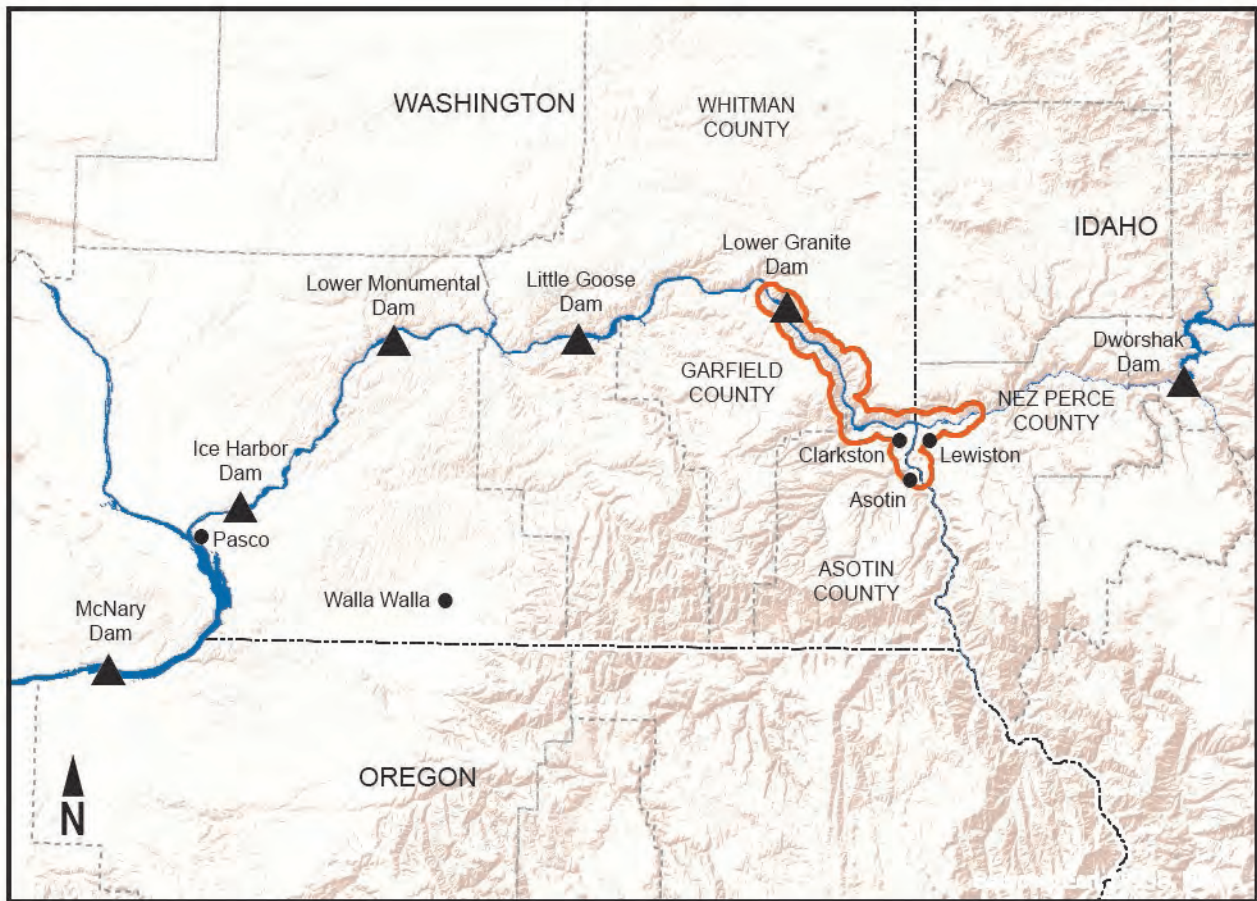


Figure 1-2. Lower Granite Project Location

The Lower Granite Master Plan was last updated in 1974. A revision is warranted due to the age of the existing Master Plan, changes in Corps policy and guidance regarding master plans, land purchases, management changes, and increased visitor use.

An Environmental Assessment was conducted as an integral part of developing the 2018 Master Plan and can be found in **Appendix B**.

1.4 PROJECT DESCRIPTION

Lower Granite Lock and Dam is located on the Snake River, at river mile 107.5, 37.2 miles upstream from Little Goose Lock and Dam,

in the southeastern corner of Washington State (**Figure 1-2**). The dam and nearly all of the Snake River portion of the reservoir lie in southeast Washington, with the north abutment of the dam in Whitman County and the south abutment in Garfield County. The lake created by the dam extends upstream on the Snake River about 40 miles to Lewiston, Idaho, more than 460 river miles from the Pacific Ocean. The District constructed 8 miles of levees around Lewiston, which are considered appurtenances to (part of) Lower Granite Lock and Dam, to help protect lives and property from the reservoir impoundment.

Lower Granite Lock and Dam (**Figure 1-3** and **Figure 1-4**) consists of a powerhouse,



Figure 1-3. Lower Granite Lock and Dam Aerial View

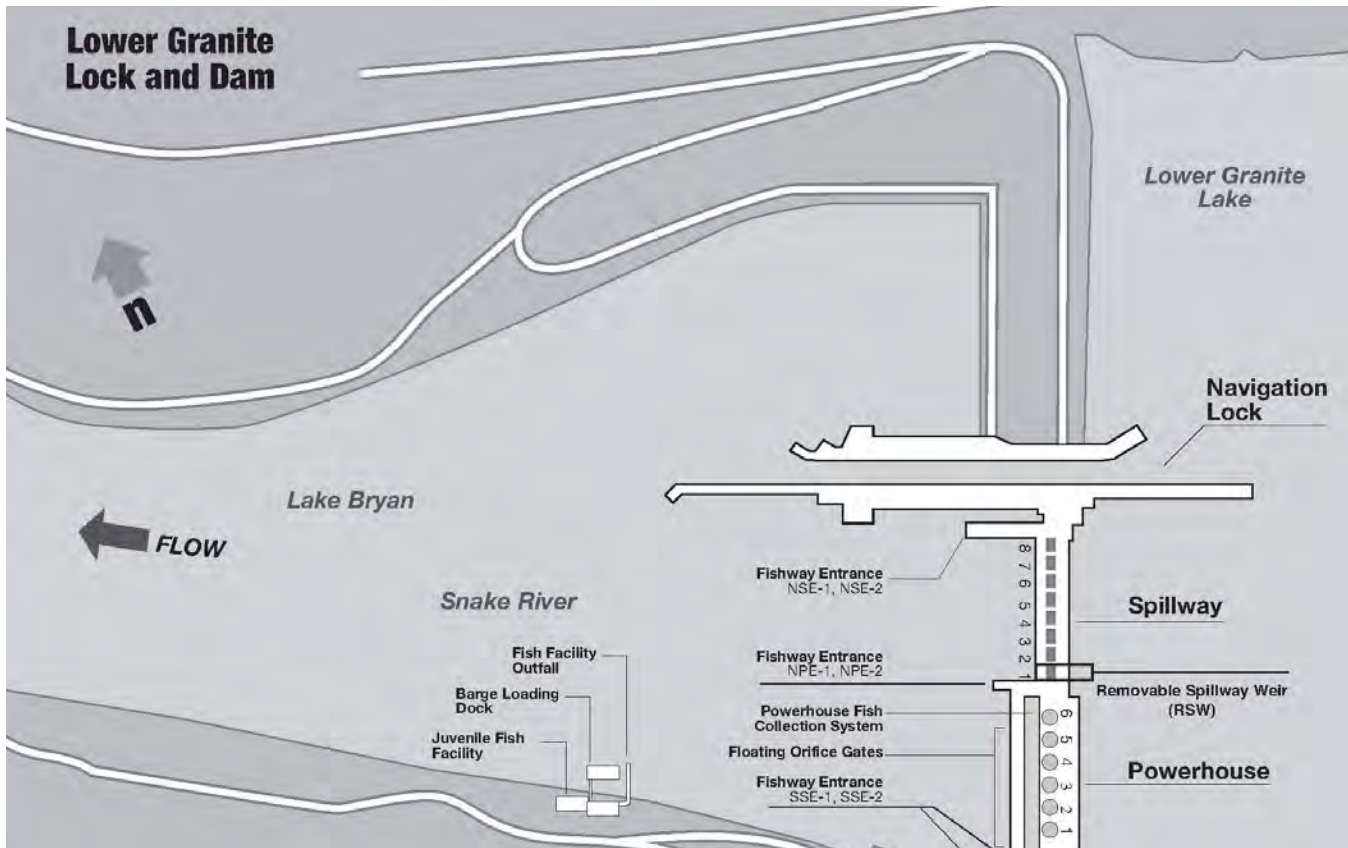


Figure 1-4. Lower Granite Lock and Dam Plan View Schematic

spillway, stilling basin, navigation lock, non-overflow sections, earthen-fill embankment, adult fish ladder, and the juvenile fish bypass and collection/transportation system. The straight-line, concrete gravity-type dam is approximately 3,200 feet long, with a maximum overall concrete height of 254 feet.

1.4.1 Powerhouse

The Lower Granite powerhouse is 656 feet long and contains six 135-megawatt turbine units. The hydraulic capacity of the powerhouse is 144,000 cubic feet per second (cfs). When in use, turbine units are operated to enhance adult and juvenile fish passage as much as practicable from March 1 through December 15. To minimize the mortality of turbine-passed

juvenile salmonids between April 1 and October 31, turbine units are operated within 1 percent of best turbine efficiency (Corps 2014). The Lower Granite Dam forebay operates between elevations of 733 and 738 feet, allowing a 5-foot drawdown for power. Extended-length submersible bar screens divert downstream migrants from the turbine intakes into a juvenile bypass and collection system. During lower flows, turbine unit 1 provides adult attraction flows to the preferred south shore ladder entrance. In addition, operation of unit 1 in the upper range with around 17,000 cfs breaks up eddies that form in the tailrace and improves tailrace egress for juvenile salmonids.

1.4.2 Spillway

The Lower Granite spillway is a concrete, gravity-type spillway. It is 512 feet long, with an ogee crest elevation of 681 feet. It contains eight bays, with flow through each bay controlled by radial (Tainter-style) spill gates 50 feet wide by 60.2 feet high. Flow deflectors on each spillbay reduce dissolved gas concentrations in the tailrace by causing spilled water to skim across the water surface rather than plunge to the bottom of the stilling basin. The spillway has a peak flood discharge of 850,000 cfs.

In 2002, a removable spillway weir (RSW) was installed in spillbay 1. The RSW is a surface flow outlet that passes a high proportion of fish per amount of flow relative to unmodified spill bays. The RSW crest elevation is 723 feet. Discharge varies with forebay elevation, ranging from 6,000 cfs (forebay elevation 733) to near 11,000 cfs (forebay elevation 738). If necessary to pass flows, it can be lowered to allow full spillbay capacity.



Figure 1-5. Lower Granite Dam New Juvenile Fish Facility, Bypass Pipe, and Fish Transportation Barge

1.4.3 Navigation Lock

The navigation lock is at the north end of the spillway. It is 84 feet wide and 650 feet long and provides a 15-foot minimum water depth over the sill. The upstream approach channel for the navigation lock includes a floating guidewall, with an approximate 15-foot draft. The guidewall extends 750 feet upstream of the spillway. The downstream approach channel includes a 700 foot-long concrete guidewall.

1.4.4 Fish Passage Facilities

The juvenile facilities at Lower Granite Lock and Dam (**Figure 1-5**) consist of a bypass system and juvenile transportation facilities. The bypass system contains several extended-length submersible bar screens with flow vanes, improved modified balanced-flow vertical barrier screens, gateway orifices, a bypass channel running the entire length of the powerhouse, and a bypass pipe moving fish to the transportation facilities or to the river. **Figure 1-6** shows the fish passage routes at the Project.

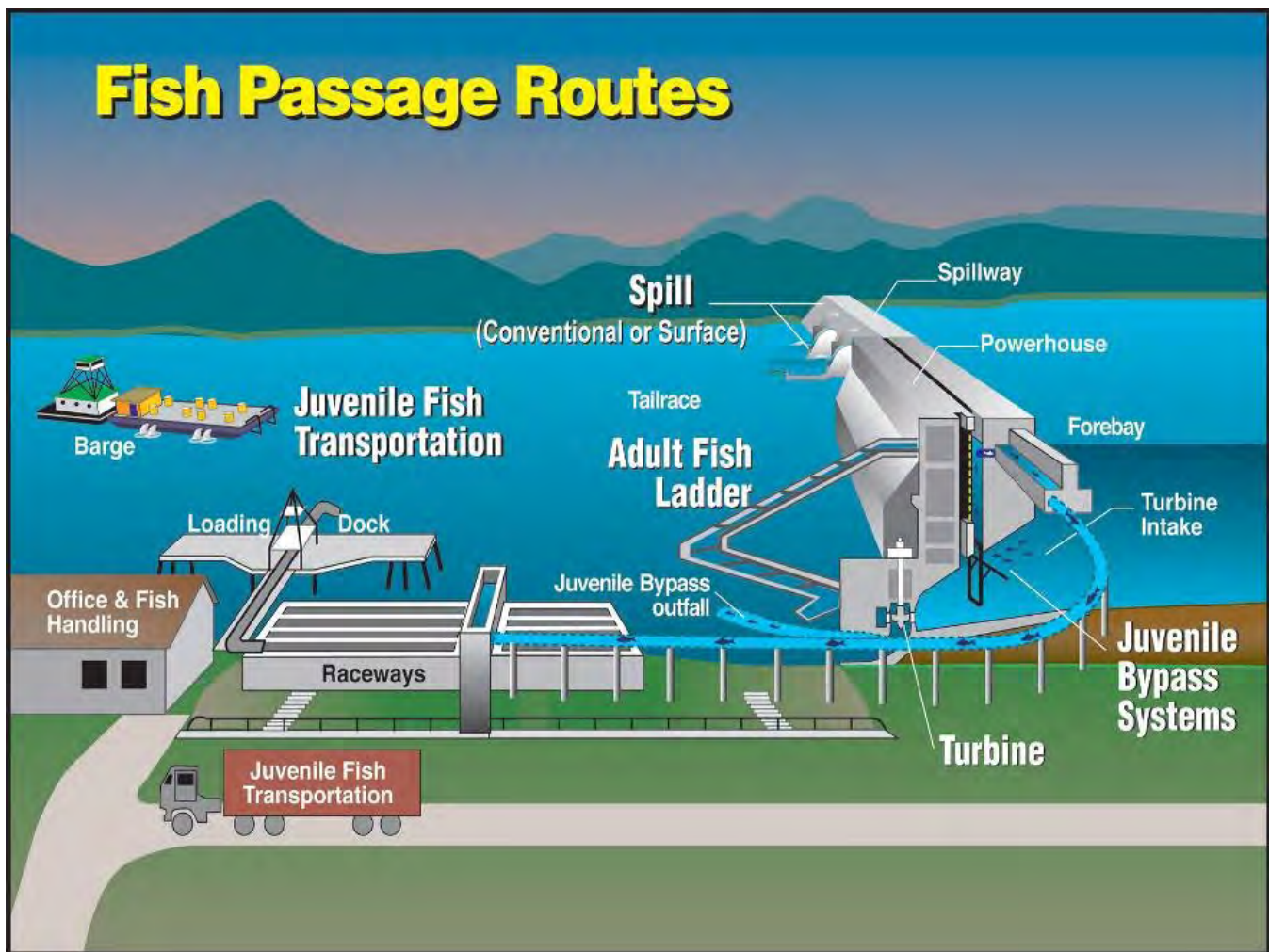


Figure 1-6. Existing Fish Passage Routes



Figure 1-7. Lewiston Levees

Improvements to the juvenile fish bypass system and Juvenile Fish Facility (JFF) (where collection for transport occurs) is expected to be completed in 2018. The JFF upgrade will occur in phases through spring 2018, with the goal of improving juvenile fish survival and increasing reliability of the bypass and collection system.

Fish facility upgrades include the following:

- “Daylighting” the below-ground fish-transportation piping from the dam to the JFF with an above-ground flume
- Remodeling turbine intake openings and the fish bypass channel inside the dam, which moves from the turbine unit around the dam
- Replacing the fish bypass channel drain to divert excess water to new piping and valves that will enhance adult fish ladder attraction,

emergency facility water supply, and adult fish trap (on the fishway) water supply

- Constructing a new powerhouse juvenile bypass outfall pipe in the tailrace

Transportation facilities include an upwell and separator structure to separate juvenile fish from excess water and adult fish; raceways for holding fish; a system for distributing fish between raceways, barges, or the river; a sampling and marking building; truck- and barge-loading facilities; and passive integrated transponder (PIT) tag detection and deflection systems.

Adult fish passage facilities at Lower Granite Lock and Dam consist of a fish ladder on the south shore, along with a powerhouse collection system and north shore entrance. These facilities are connected by a channel running under the

spillway and along the face of the powerhouse. The powerhouse collection system and north shore entrance are supplied with water by a pumped auxiliary water supply system. Intakes for this system are located on the south shore, downstream from the south shore fish ladder entrances. In addition, forebay water is supplied through diffuser 14. An adult fish trapping facility is located in the fish ladder for sampling adults and collection of brood stock.

Modifications to improve adult Pacific Lamprey passage include passage structures and installation of metal plating to assist lamprey upstream. Record hot weather in recent years created thermal barriers to adult fish migration. After testing a temporary solution in 2014-2015, the Corps constructed two permanent “intake chimneys” in 2016 to pump water from deep in the reservoir to cool the adult fish ladder and the adult fish trap built into the fish ladder.

1.4.5 The Lewiston Levees

Lower Granite Lake (impoundment) extends 39 miles upriver from the dam to the cities of Lewiston, Idaho, and Clarkston, Washington. The Corps constructed 8 miles of levees around Lewiston to help protect lives and property from potentially high water conditions created by the impoundment of Lower Granite Dam. The levees are considered appurtenances to (part of) Lower Granite Lock and Dam. The Lewiston Levees encompass the entire length of the city waterfront area along both the Snake and Clearwater Rivers (**Figure 1-7**). The levee system is divided into three segments:

- North Lewiston Levee – The North Lewiston Levee on the north bank of the Clearwater River extends from a high rock promontory near the Great Northwest Railroad (GRNW) (previously named Camas Prairie Railroad until 2004) Bridge to a tie with high

ground upstream about 2.4 miles. It protects all of the commercial-industrial portion of the city known as North Lewiston.

- East Lewiston Levee – The East Lewiston Levee extends for 2.1 miles along the south bank of the Clearwater River from a point near the Clearwater Potlatch Corporation Tissue Plant downstream to the Memorial Bridge (U.S. 12). It protects Clearwater Paper Corporation, the GRNW switch yards, and the City of Lewiston water treatment plant. Provisions are made for emergency construction of an earthfill dam or groin at Memorial Bridge for purposes of isolating this segment from the rest of the system in case of threatened levee failure either upstream or downstream.

- West Lewiston Levee – The West Lewiston Levee continues from Memorial Bridge down the southern bank of the Clearwater River to its confluence with the Snake River and then up the north bank of Snake River to a high ground tie-in at approximately 15th Avenue, just downstream of the Southway Boat Ramp, for a length of about 3.1 miles. This levee segment encompasses all of the shoreline surrounding the Lewiston business area.

1.5 PROJECT PERTINENT DATA

The following table identifies detailed data for Lower Granite Lock and Dam.

Table 1-1. Lower Granite Lock and Dam Pertinent Data

LOWER GRANITE LOCK AND DAM PROJECT PERTINENT DATA	
Location	
State	Washington
County	Garfield and Whitman
River	Snake River
River miles from mouth of Snake River	107.5
River miles upstream from Little Goose Dam	37.2
Latitude and Longitude	46 39' 37" N, 117 25' 37" W
Owner	US Army Corps of Engineers, Walla Walla District
Type of Project	Run-of-river
Real Estate	
Fee acquisition land above pool elevation 738	9,224 acres
Reservoir	
Name	Lower Granite Lake
Elevations (Feet Mean Sea Level)	Maximum at dam for spillway design flood 746.5
Normal operating range at confluence gage (RM 139.5)	738 to 733
Minimum at dam for standard project flood	724
Length, miles	Snake River (to Asotin, RM 146.8) - 39.3. Clearwater River - 4.6.
Length of shoreline	91 miles
Surface area at elevation 738 (low flow, flat pool)	8,900 acres
Storage below flat pool elevation 738	483,800 acre-feet
Storage below flat pool elevation 733	440,200 acre-feet
Storage between elevation 733 and 738	43,600
Height normal high pool to tailwater elevation 638 (low flow, 30,000 cfs or less)	100 ft
Levees	
Top width	12 ft
Materials	Gravel and earth fill with impervious core
Top elevation	5 feet above backwater profile for standard project flood
Embankment length	Lewiston - 8.6 miles
Installed pumping capacity	Lewiston levees 450.4 cfs
Dam	
Axis (Lambert)	N 32° 00'E
Length, feet	Dam total length at crest, 3,200
Spillway	
Total Number of Bays	8
Overall length (abutment centerlines)	512 ft
Deck elevation	751 ft msl
Ogee crest elevation	681 ft msl

Table 1-1. Lower Granite Lock and Dam Pertinent Data (continued)

LOWER GRANITE LOCK AND DAM PROJECT PERTINENT DATA (continued)	
<i>Control gates</i>	
Type	Tainter
Size	50'W x 60'H
Gantry crane (joining use with powerhouse) capacity	100 tons
Stilling basin length	188 ft
Stilling basin elevation	580 ft msl
Maximum design capacity	850,000 cfs
Powerhouse	
Length overall	656 ft
Spacing	Units 1-5, 90 ft. Unit 6, 96 ft.
Erection and service bay	110 ft
Width overall, transverse section	243.17 ft
Intake deck elevation	751 ft msl
Tailrace deck elevation	656 ft msl
<i>Turbines</i>	
Type	Kaplan, 6 blade
Runner diameter	312 in
Revolutions	90 per min
Rating	212,400 horsepower
<i>Generators</i>	
Rating (nameplates)	135,000 kilowatts
Power factor	0.95 Kilovolt
Ampere rating	142,100
Total units	6
Plant capacity, nameplate rating	810,000 kilowatts
Navigation Lock and Channels	
Net clear length, lock chamber	674 ft
Net clear width, lock chamber	86 ft
Upstream Gate Type	Submersible tainter
Upstream Gate Height	23 ft
Downstream Gate Type	Miter
Downstream Gate Height	122 ft
Operating water surface elevations in chamber	633 to 738
Maximum operating lock lift	105 ft
Abutment Embankment	
Embankment elevation	756
Embankment top width	45 ft
Material	Gavel fill with rock facing, impervious silt core. Upstream, combination sand and gravel filters. Downstream, gravel and sand filters.

Table 1-1. Lower Granite Lock and Dam Pertinent Data (continued)

LOWER GRANITE LOCK AND DAM PROJECT PERTINENT DATA (continued)	
Fish Facilities	
<i>Upstream migrants fish ladder</i>	
Number of fish ladders	1
Ladder clear width	20 ft
Design capacity	75 cfs
<i>Downstream migrants bypass system</i>	
Design pool range	733 to 738
Design capacity	200 to 250 cfs
Extended-length submerged bar screens	18
Vertical barrier fish screen	18
Fingerling collection gallery	1
Fingerling transportation flume	1
Fingerling holding and sampling facility	1
Hydrologic Data	
Drainage area	103,200 square miles
Period of record	Oct. 1915 to Sept. 1972 (Discontinued in Dec. 1972)
<i>Discharges</i>	
Instantaneous maximum of record, 29 May 1948	369,000 cfs
Instantaneous minimum of record, 2 Sept 1958	6,660 cfs
Average annual flow	50,300 cfs
Average annual mean daily peak flow	188,300 cfs
<i>Extreme outside period of record</i>	
Flood of June 1894	420,000 cfs
Flood of June 1894, controlled by existing projects	295,000 cfs
Standard project flood, controlled by existing projects	Snake River below Clearwater River - 420,000 cfs Snake River above Clearwater River - 295,000 cfs Clearwater River above Snake River - 150,000 cfs
Spillway design flood	850,000

1.6 CONCEPTUAL FRAMEWORK

The process of developing the Lower Granite Master Plan encompassed a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational, and socioeconomic conditions and trends. With a generalized conceptual framework, the process focused on four primary components:

- Regional and ecosystem needs
- Project resource capabilities and suitability
 - Expressed public interests that are compatible with the Project's authorized purposes
 - Environmentally-sustainable elements

The Corps held two scoping meetings in support of the Master Plan to give the public opportunities to provide input and ideas. One was held in Clarkston, Washington, on March 22, 2017, and the other in Pullman, Washington, on March 23. Recommendations received during the scoping meeting helped Corps planners identify opportunities for improved management of Project lands. Those recommendations ultimately facilitated the formulation and evaluation of proposed plans.

Information gathered during the scoping period was combined with the detailed Project inventory to form a list of opportunities, constraints, and other influencing factors for future natural resource and recreation development and management at Lower Granite Lock and Dam.

From this inventory and input, updated land classifications were applied, and updated land classification maps were created (**Appendix D**). These maps are used for locating appropriate development and management actions that will be detailed in the Lower Granite OMP.

1.7 REFERENCES AND DESIGN MEMORANDUMS

Document references can be found in Section 9, References, and a list of all design memoranda pertinent to the Project is furnished in **Appendix C**.

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Figure 2-1. Lower Granite Reservoir

SECTION 2. PROJECT SETTING AND FACTORS INFLUENCING RESOURCE USE, MANAGEMENT, AND DEVELOPMENT

Section 2 is an overview of the key factors that influence and constrain present and future use, management, and development of land and water resources at Lower Granite Lock and Dam. These factors fall into three general and interrelated categories: natural resources, historical and social resources, and administration and policy. An analysis of these factors, as well as regional needs and public input, results in a framework to minimize adverse impacts to the environment and resolve competing and conflicting uses. Information presented in this section is used to designate land classifications, develop Project-wide resource objectives, and identify facility needs.

2.1 DESCRIPTION OF RESERVOIR, NAVIGATION POOL, AND SHORELINES

Lower Granite Reservoir (**Figure 2-1**), the impoundment created by Lower Granite Dam, begins at river mile 107.5 as measured from the confluence of the Snake and Columbia Rivers. The reservoir extends 46 miles upstream to Asotin, Washington. At river mile 139.2, the Clearwater River enters the reservoir at Lewiston, Idaho. Lower Granite Reservoir is considered a run-of-the-river reservoir and is operated primarily for hydroelectric power, navigation, recreation, and incidental irrigation.

The reservoir's average channel width is 2,080 feet with an average depth of 56 feet, with depths ranging from 140 feet to less than 3 feet in shallow shoreline areas. The normal pool elevation has a maximum fluctuation of approximately 5 feet. To protect roads and railways, much of the shoreline is lined with riprap. In the lower one-half of the reservoir, natural shorelines are generally steep and often characterized by cliffs and talus substrate. There is little riparian vegetation along the shorelines of the reservoir.

The reservoir maintains a shallow draft navigation channel to accommodate commercial ports in both Lewiston, Idaho, and Clarkston, Washington, that ship agricultural and forest products down to the mouth of the Columbia River. Recreational activities are a large component of use by the public and include commercial river tour boats and private boating and fishing in the reservoir. Hiking and picnicking at habitat management units along the river and at developed parks such as Chief Timothy and Hells Gate are popular recreational activities, as well. The reservoir has an extensive network of day-use and camping areas to facilitate recreation, such as boat launches, picnic areas, restroom facilities, and low impact camping.



Figure 2-2. Tug Boat Pushing Barge Upriver, Approaching Lower Granite Lock and Dam on the Snake River

Recreation facilities are further identified in Chapter 4 and Chapter 5 of this Master Plan.

The District constructed 8 miles of levees around Lewiston to help protect lives and property from potentially high water conditions from the impoundment created by Lower Granite Dam. Since construction, the levees have prevented more than \$39.3 million in potential flood damages. The Lewiston Levees encompass the entire length of the city waterfront area along both the Snake and Clearwater Rivers (**Figure 2-3**) and provide significant secondary recreation with the waterfront trail system on top of the levees. Properties adjacent to the levees are all commercial and light industrial in character.

2.2 HYDROLOGY

The Snake River originates near Jackson, Wyoming, and winds its way 1,078 miles to the confluence with the Columbia River near Pasco, Washington. It is the principal tributary of the Columbia River. The major tributaries to the lower Snake River are the Clearwater, Palouse, and Tucannon Rivers. The Clearwater River, the largest tributary to the lower Snake River segment, historically contributes about 39 percent of the combined flow in the lower Snake River reach (Corps 1995b). Flows from the Clearwater, along with releases from upriver Dworshak Dam, make up close to 50 percent of



Figure 2-3. Lewiston Levees



Figure 2-4. Watersheds of the Snake, Salmon, and Clearwater Rivers Drain into the Lower Granite Reservoir

the lower Snake River flows during periods of low flow. Flows in the lower Snake River are highest in the spring (average annual peak of approximately 165,000 cfs) and lowest in late summer (averaging 25,000 cfs).

2.3 CLIMATE

The Project lies within the "banana belt" of eastern Washington and north-central Idaho. This belt of comparatively mild winters extends from Hood River, Oregon, to Lewiston, Idaho, and is slightly lower in elevation than the surrounding terrain. This fact, combined with the influence of Pacific air that spills over the Cascades and through the Columbia Gorge, moderates most winters. Summers are warm to hot, and dry, with plenty of sunshine. These conditions make for a slightly lengthened, water-related recreation

season. Spring and fall winds are often strong and gusty and can create waves of four to five feet on exposed reaches of the reservoir system. However, the local wind exposure on the Snake River above Interstate (blue) Bridge (between Lewiston and Clarkston) is not as severe as on the Columbia River or other Snake River locations.

2.4 TOPOGRAPHY, GEOLOGY, AND SOILS

2.4.1 Topography

Of all the factors that affect and influence development potential, the topography is the most limiting. The steep, rugged terrain comprises more than two-thirds of the reservoir's shoreline, limiting development of major public recreation facilities, industry, and habitat



Figure 2-5. Columnar Basalt along the Snake River

preservation and enhancement. Developable land is limited in both the reach downstream from Alpowa Creek and upstream areas.

2.4.2 Geology

The Snake River Canyon is deeply cut into an unknown thickness of lava formations that underlie much of Idaho and southeastern Washington. The course of the river is generally controlled by the structure of the rocks. Upstream of Lewiston, from the river reach of Asotin to the confluence of the Grande Ronde River, the course of the Snake River is controlled by a sequence of geologically older rocks. Within the Lewiston Basin, the Snake River is controlled by the folding and faulting that originally created the basin. Downstream, the river is controlled by the regional dip of the basalt strata and the structure of the Blue Mountains. Within the Project area, three individual geologic features warrant description and explanation, as indicated below.

Granite Point

The giant rock outcrop, commonly known as Granite Point (**Figure 2-7**), lies 6 miles upstream from Lower Granite Lock and Dam. This formation from which the Project derives its name was the site originally planned for the location of the dam. Granite Point is a topographic name for a well-known erosional remnant (a landscape feature that stands above surroundings that have eroded). Very little is known about the surface on which the basaltic rocks were deposited, except what can be seen on the edges of the basalts in the Columbia Plateau, and by those materials that protrude through them. Granite Point is such a condition where erosion has removed several hundred feet of basalts to expose the granitic rock. Close examination reveals it to be more gneissic than true granite. In this sense, it is probably more closely related to gneissic rocks of Belt Series which crop out farther to the east and

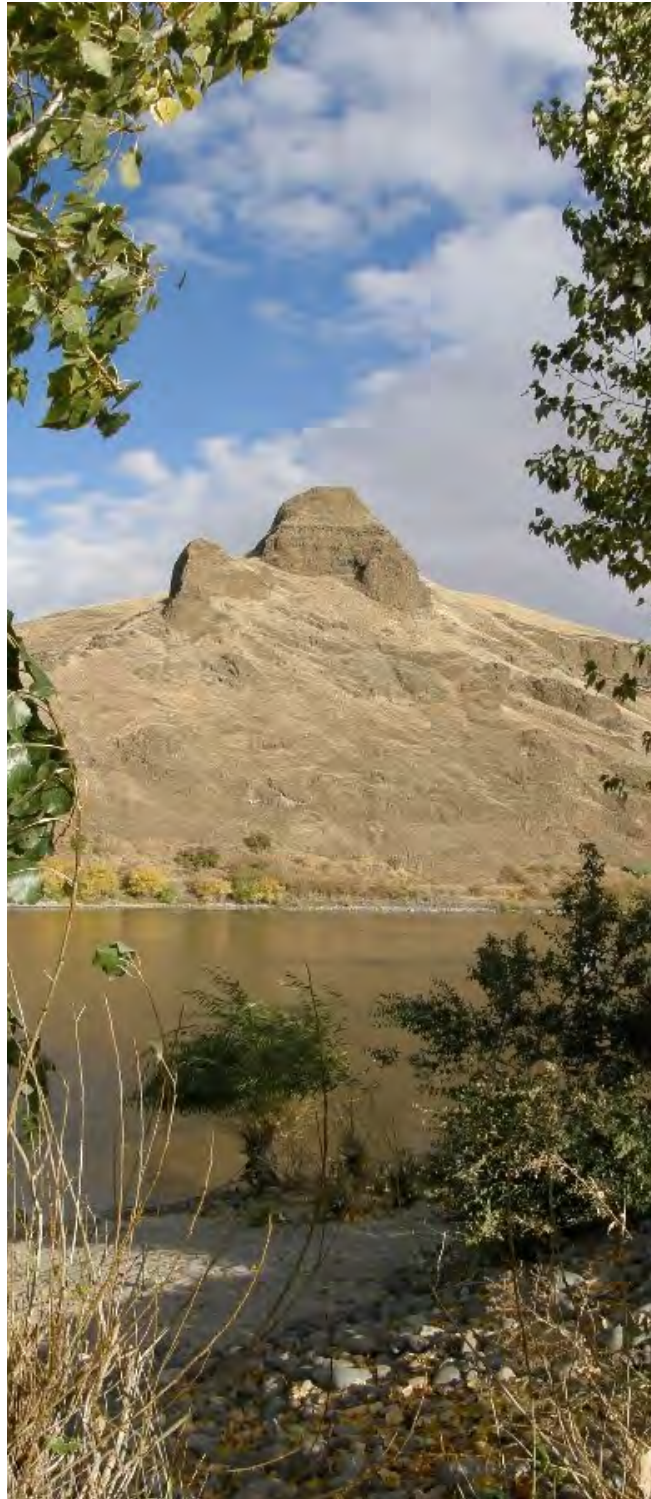


Figure 2-6. Geology near Asotin, Washington



Figure 2-7. Granite Point

north, both in Washington and Idaho. Its geologic age would then be 500 million years, or the Pre-Cambrian age.

Lewiston Basin

The Lewiston Basin is approximately 12 miles in length in an east-west direction and four miles in width in a north-south direction. The basin area is the direct result of structural deformation of the basalt rocks. This rupturing of the earth's crust is best viewed from the Silcott Island area looking to the northeast, in which the folded and faulted edges of the basalt strata can be seen as they rise to the skyline.

Swallows Nest

Swallows Nest is the name of another topographic feature comprising an erosional remnant. It is located along the Snake River one mile south of Clarkston, Washington, along Hwy 129. It consists of a basalt stratus, which has eroded to its present unique shape (**Figure 2-8**). This basaltic rock is geologically young intracanyon basalt, likely to be less than one million years old.

2.4.3 Soils

The soils along the lower Snake River can be primarily divided into three types: upland soils along the hillslopes and canyons, alluvial soils along the river, and bench soils along the ridgetops and terraces above the river. The upland soils are primarily shallow to very deep, silty loam soils formed from loess deposits and residuum from basalt. These soils tend to have a high-to-severe erosion hazard due to rapid runoff along the steep slopes of the canyon. Alluvial soils are found in the valley bottom and are excessively drained and range from cobbley, coarse sand underlain by stratified cobbles, boulders, gravels, and sand. These alluvial soils were more subject to periodic flooding prior to river impoundment. The bench-type soils tend to be sandy loam developed from glacial outwash, loess, volcanic ash, and basalt. These bench-type soils have slow runoff characteristics and slight erosion hazards because they tend to be on less steep slopes.

Many of the Snake River Plateau soils are light

and highly erodible with low rainfall limiting the ability of vegetative cover to reestablish, once removed. Wind erosion is prevalent, especially during the spring and fall, when high winds and dry soil conditions create dust storms. The severity of these dust storms is exacerbated by dryland agricultural practices that expose the soil during spring cultivation and fall harvesting.

Erosion from areas burned by forest fires and soils plowed for agriculture are two of the main factors that contribute sediment to the rivers. The use of no-till farming practices reduces the sediment input from agriculture. Landslides in burned areas contribute large amounts of sediment. Landslides of various types also occur along the reservoir shorelines. These landslides are generally within the surface layer sediments, especially those that are somewhat poorly drained because of an admixture of finer grained sediment.

The lower Snake River downstream of Lewiston, Idaho, annually transports



Figure 2-8. Swallows Nest

approximately 3 to 4 million cubic yards of new sediments that have been eroded from its drainage basin. Approximately 100 to 150 million cubic yards of sediment have been deposited upstream of the four lower Snake River dams (mostly in Lower Granite reservoir) since Ice Harbor became operational in the early 1960s.

2.5 REGIONAL ACCESSIBILITY

U.S. Highway 12, a major east-west route that enters the Inland Empire from Montana by way of Lolo Pass, traverses the north bank of the Clearwater River coming into Lewiston, Idaho. After passing through Lewiston and crossing both rivers, it passes through Clarkston, Washington, and follows downstream along the left bank of the Snake River for about 9 miles. There it leaves the Snake River Canyon and continues to western parts of the state, connecting with other major highways. U.S. Highway 95, with a connection to U.S. Highway 195, enters Lewiston and affords access to Lower Granite Lake from regions to the north and south. Numerous state and county roads afford local access. Commercial air transportation service to the Lewiston-Nez Perce County and Pullman-Moscow Regional Airports is available. Railroad freight service to Lewiston is furnished by the Great Northwest Railroad. There is no rail passenger service within the project area.

2.6 RESOURCE ANALYSIS (LEVEL ONE INVENTORY DATA)

The Corps is required, with few exceptions, to prepare an inventory of natural resources for the operational civil works projects that it manages. In accordance with Engineer Regulation and Engineer Pamphlet 1130-2-540, this basic inventory is referred to as a Level One Inventory and includes the following:

- Vegetation in accordance with the National Vegetation Classification System through the sub-class level
- Assessment of the potential presence of special status species including, but not limited to, Federal and State listed endangered and threatened species, migratory species, and birds of conservation concern listed by the U.S. Fish and Wildlife Service (USFWS)
- Land (soils) capability classes in accordance with the Natural Resource Conservation Service criteria
- Wetlands in accordance with the USFWS Classification of Wetlands and Deepwater Habitats of the United States

This basic inventory information is used in preparing project master plans and OMPs. An overview of the natural resources and related management actions at the Project is provided in the following sections.

2.6.1 Fish and Wildlife Resources

The Project provides fish and wildlife habitat for over 250 species across approximately 8,626 acres, between Lewiston, Idaho, and Starbuck, Washington. Corps-managed habitat management units (HMUs) provide public hunting and fishing opportunities, as well as access to view wildlife for educational, recreational (both passive and consumptive), and aesthetic experiences.

The Project supports diverse vegetation that is both actively and passively managed. This, in turn, provides habitat for a wide variety of wildlife. The Corps owns and maintains a narrow strip of land along the Snake River downstream from Asotin to the Lower Granite Dam (and beyond) that serves as a corridor for wildlife. The trees, shrubs, and grasses along the river provide cover and food for foraging fish and animals.

There are numerous lowland tributary riparian and wetland areas, allowing for the formation of palustrine forests. The river corridor is typically characterized by grassland or cottonwood and willow riparian species, with shrub-steppe further upland.

The HMUs are regularly occupied by whitetail and mule deer, striped skunks, rabbits, coyotes, and porcupines. Migratory songbirds can also be found along the river corridor, including red-shafted flickers, mourning doves, pheasants, valley quails, as well as various species of swallows, sparrows, and thrushes.

There are also some examples of species presence where there was once few or none. For example, American white pelicans (*Pelecanus erythrorhynchos*), a Washington State endangered species, are now becoming common on Lower Granite up to Clarkston, as are osprey (*Pandion haliaetus*). Another example, the Canada goose (*Branta Canadensis*), a species once the focus for mitigation and repopulation in Eastern Washington, is now common year-round in the Lewis-Clark Valley, including in Asotin. Geese can be routinely seen in parks and recreation areas, often causing conflicts with people.

The Corps actively manages the HMUs to control invasive species and enhance the local native habitats. Invasive species are a big issue in riparian areas. False indigo, for example, is infesting the shoreline in many areas, as is reed canary grass, purple loosestrife, and phragmites in areas of deposition and shallow water.

Grassland management is a main focus with mowing, over-seeding, and invasive plant control to maintain native bunchgrass fields. In addition, various riparian and upland plantings are prioritized across approximately 30 acres per year to bolster wildlife habitat.

Several HMUs contain backwater ponds and

sloughs, providing fishing and waterfowl hunting opportunities.

2.6.2 Vegetative Resources

Major vegetation zones in the region include grasslands and shrub-steppe in the lower to mid-elevations, forest in mid to higher elevations, and alpine meadows in the highest elevations. The typical vegetation sequence diagram (**Table 2-1**) lists the various types of vegetation in a conceptual order. Vegetation types can vary depending on the geologic province (DNR 2018).

As listed in **Table 2-1**, there are six different vegetation types within a 100-mile radius, with shrub-steppe and grassland being the dominant vegetation types within the Project area (EPA 2011). The vegetation type does not always appear in the order shown below; vegetation may change from sagebrush-steppe to Grand fir-Douglas fir types without wheatgrass or bluegrass appearing in-between. There is usually not a clear break between types, but rather, an area of transition, or ecotone, where the different types will overlap.

The characteristic vegetation communities found in the Palouse Slope and Yakima Fold Belt provinces are shrub-steppe and steppe. Shrub-steppe occupies the center of both provinces and there is a transitional zone composed of steppe between the shrub-steppe and forested ecosystems. These two habitats are typically arid-to-semiarid and have low precipitation, warm to hot summers, and relatively cold winters. Agriculture and grazing patterns, as well as the increased use of irrigation, have drastically changed the natural distribution of the steppe-type vegetation.

Steppe habitats are characterized by a variety of perennial grasses and the absence of woody shrubs. The co-dominance of shrubs and grasses is characteristic of the shrub-steppe. Two steppe

Table 2-1. Typical Vegetation Sequence

Geologic Province	Vegetation Zones	Vegetation Type
Blue Mountain	Needleleaf Forest	Western Spruce-Fir Forest Grand Fir-Douglas Fir Forest Western Ponderosa Pine
Palouse Slope	Grasslands	Fescue-Wheatgrass Wheatgrass-Bluegrass
Yakima Fold Belt	Shrub-Steppe	Sagebrush-Steppe

vegetation zones, dominated by wheatgrass-bluegrass and by wheatgrass-fescue have been identified in the region (Daubenmire, 1970). Soil characteristics and precipitation are responsible for the conspicuous, but discontinuous, layer of shrubs. This, in turn, is responsible for the dominance of grasses, as opposed to shrubs. Seven zonal associations have also been identified in the shrub-steppe region of Washington (Daubenmire, 1970). In this report, these zonal associations have been carried over into Oregon. Many of the steppe and shrub-steppe vegetation zones in the Palouse Slope have been replaced by dryland agriculture. This is typical of the area surrounding the Project.

Three vegetation categories are found within the Project: terrestrial, riparian, and wetland. To a large extent, these differences determine wildlife niches, habitats, and associated values. Presently, approximately 60 percent of the Project is classified as mitigation and environmentally sensitive areas mainly consisting of grassland and shrub-steppe.

Habitat management focuses on grassland enhancement and vegetation diversity, including efforts to increase riparian habitat. A wildlife contract has been in place for over 20 years to control noxious weeds, manage native grasses, plant wildlife food plots, and plant native trees and shrubs. Acreages for these management activities has varied over the years, but is prioritized by Corps wildlife biologists.

Ongoing Planting Work

Under the contract for operation and maintenance of the wildlife habitat areas (commonly known as “the wildlife contract”), up to 30 acres of planting may occur annually in two ways:

- The wildlife contract contains 5 acres of planting a variety of trees and shrubs of 1- and 2-gallon size, which are maintained for 1 year to achieve a minimum of 70 percent survival.
- Each year, approximately 30 acres worth of plant material is donated by a single Clarkston, Washington, resident. Most of the stock is 10-cubic-inch plugs, but sometimes there are trees such as ponderosa pine or red or white alder in 1-gallon pots. Although these plants are planted under the wildlife management contract, no survival standards are required of the contractor. Total acreage planted with donated plants varies year to year.

2.6.3 Threatened and Endangered Species

Effects to species listed as threatened or endangered under the Endangered Species Act, as well as designated critical habitat that may be within the Project, must be considered in all planning, operations, and management activities within Project boundaries.

Federally listed species that may occur in the Project area are Snake River spring/summer and fall Chinook (*Oncorhynchus tshawytscha*), Snake

River Sockeye (*O. nerka*), Snake River Steelhead (*O. mykiss*), Bull Trout (*Salvelinus confluentus*), Spalding's catchfly (*Silene spaldingii*), and Yellow-billed cuckoo (*Coccyzus americanus*). The lower Snake River and its tributaries within the Project area contain designated critical habitat for all ESA-listed fishes. Each is described in the following paragraphs.

Snake River Spring/Summer Chinook Salmon

Snake River spring/summer Chinook salmon were listed as threatened in 1992 and include all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, Salmon, and mainstem Snake Rivers.

Chinook salmon are anadromous, which means that adults spawn in freshwater streams where juveniles hatch, but then they migrate out to the ocean to grow up to 3 years before returning to their natal stream (where they were born) to spawn as adults. Adult and juvenile spring/summer Chinook salmon generally only migrate through the Project area.

Currently, there are five subbasins in the Snake River (lower Snake River, Tucannon River, Grande Ronde River, Imnaha River, and Salmon River), including 33 watersheds with natural spawning populations (NMFS 2013). A number of limiting factors, including degraded freshwater spawning and rearing habitat, the hydropower system, and harvest, affect these populations, and they remain at high risk of extinction.

Snake River Fall Chinook Salmon

Snake River fall Chinook salmon were listed as threatened June 28, 2005, and reaffirmed April 14, 2014. Historically, the lower and middle Snake River populations formed the two major population groups. However, the construction of Hells Canyon Dam extirpated (made extinct) the middle Snake River population. Spawning populations presently occur in the mainstem

Snake River below Hells Canyon Dam, Lower Granite Dam, and in the lower reaches of the Clearwater, Grand Ronde, Tucannon, Salmon, and Imnaha Rivers.

Like other salmon species, fall Chinook are anadromous, but the adults typically spawn later in the fall and at lower elevations in streams and rivers compared to spring/summer Chinook. Juveniles outmigrate slightly later in the summer and are typically younger and smaller than spring/summer Chinook.

There are two types of rearing life history characteristics that have been documented in fall Chinook salmon: ocean type and reservoir type. Ocean type refers to juveniles that outmigrate on a typical schedule to the ocean in the summer. Reservoir type refers to juveniles that begin their outmigration later in the summer, then rear in the lower Snake and Columbia Rivers, where they grow larger and slightly older over winter before completing their migration to the ocean the following spring.

Fall Chinook salmon migrate through the Project area, but reservoir type fall Chinook smolts likely rear in the lower Snake River within the Project area, and a small population of adults typically spawn in the Snake River below Lower Granite Dam.

Snake River Sockeye Salmon

Snake River sockeye salmon were listed as endangered, November 20, 1991. Historically, Redfish Lake in Idaho contained an abundant spawning population of Snake River sockeye. This population was extirpated, but has since been restored to a minimum level. Five other historic lakes in the Stanley Basin and Sawtooth Valley once produced sockeye as well, but the Redfish Lake population is the last remaining (NMFS 2013).

Like other salmon, sockeye salmon are anadromous, but they differ in that spawning and rearing occur in headwater lakes rather than instream. This species is at extremely high risk of extinction due to a lack of abundance, productivity, spatial structure, and genetic diversity. Hatchery propagation efforts have done well providing substantial numbers of fish for supplementation, but survival rates must increase across all life stages to reestablish a sustainable population.

Sockeye generally only migrate through the Project area, but adults have been known to hold up below the Project in the summer when high water temperature impedes migration. Sockeye may also seek thermal refuge in the Clearwater River upstream of its confluence with the Snake River.

Snake River Steelhead

Snake River steelhead were listed as threatened on August 18, 1997, and protective regulations were issued under Section 4(d) of the Endangered Species Act on July 10, 2000. Their threatened status was reaffirmed on January 5, 2006, and again on April 14, 2014. This distinct population segment includes populations below natural and manmade impassable barriers in streams in the Snake River basin of southeast Washington, northeast Oregon, and Idaho.

Snake River steelhead are a summer run fish that can enter the Columbia River Basin throughout the year as adults, but typically migrate through the lower Snake River September–November. The adults overwinter in the mainstem Snake and Columbia Rivers, during which time they sexually mature, then complete their upriver migration early the following spring to spawn March–April. Juveniles outmigrate April–May, but unlike Chinook salmon, who outmigrate, typically at one year of age or less, juvenile steelhead typically do not outmigrate

before age 2 or 3. Adult and juvenile steelhead migrate and rear within the Project area.

Steelhead have generally been referred to as “A-run” and “B-run,” based on two different ocean rearing strategies. A-run fish generally spend only 1 year in the ocean before returning, and they are smaller than B-run fish, which spend 2 to 3 years in the ocean before returning to freshwater. While A-run fish are also found throughout most of the Snake and Columbia River Basins, research has shown that B-run fish are strictly from the Clearwater and Salmon River Basins (NMFS 2017).

Another life history characteristic separating steelhead from other anadromous salmon is iteroparity, the ability to spawn more than once. While all other salmon species return to freshwater, spawn, and then die, steelhead may return to the ocean again, or remain in the freshwater rivers to spawn again.

Steelhead typically migrate through the Project area, but they may also seek thermal refuge in the Clearwater River upstream of the Snake River confluence in summer and overwinter in the Lower Granite Dam pool prior to completing their spawning migration.

Bull Trout

The USFWS issued a final rule listing the Columbia River Basin population of bull trout as a threatened species on June 10, 1998. Bull trout are currently listed throughout their range in the western United States as a threatened species. Historically, bull trout were found in about 60 percent of the Columbia River Basin. They now occur in less than half of their historic range. Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada (Corps 2015).

The lower Snake River within the Project area has one major stronghold bull trout population

in Asotin Creek, which consists of six tributaries. Asotin Creek offers the only bull trout refugia with suitable spawning and rearing habitat in the Project area (USFWS 2010). Bull trout persistence in this basin is important for maintaining connectivity between populations in the upper Snake River Basin and the Columbia River.

The Asotin Creek bull trout population has resident and migratory life history components. Migratory fish move among connected streams and rivers, while resident fish complete their entire life cycle in the headwater streams where they spawn and rear.

Migratory bull trout spawn in headwater streams along with resident bull trout. Their juveniles rear from 1 to 4 years before migrating downstream to mainstem river habitats as sub-adults. Migratory adult bull trout spawn in September–October, then migrate downstream to overwintering areas from October–December after spawning, and then begin their return migration to the headwaters May–June.

Migratory sub-adults may overwinter in creek and river mainstems for several years before returning to the headwaters once sexually mature. Resident and migratory forms may be found together, and either form may give rise to offspring exhibiting either resident or migratory behavior. Both sub-adult and adult bull trout likely use the lower Snake River during the fall, winter, and spring for rearing and overwintering, although the proportion of local populations that may do this is unknown.

Spalding's Catchfly

Spalding's Catchfly was listed as threatened October 10, 2001. This plant is found predominantly in grasslands and sagebrush-steppe. Its current range extends through northeast Oregon, western Idaho, and southeast Washington, encompassing the Project area. To date, no Spalding's catchfly have been

documented on Project lands (B. Trumbo, personal communication, February 22, 2018).

Western Yellow-Billed Cuckoo

The western distinct population segment (west of the continental divide) of the yellow-billed cuckoo was listed as threatened under the ESA on October 3, 2014. Critical habitat has been proposed; however, Washington is not included in the critical habitat designation. The bird prefers open woodlands with clearings with a dense shrub layer. They are often found in woodlands near streams, rivers, or lakes, but yellow-billed cuckoos occur most frequently and consistently in cottonwood (*Populus* spp.) forests with thick willow understory (Taylor 2000). They typically require an understory of 75 percent cover over a minimum of 10 acres. In winter, yellow-billed cuckoos migrate to tropical habitats with similar structure, such as scrub forest and mangroves. Individuals may be on breeding grounds between May and August.

In the Pacific Northwest, the species was formerly common in willow bottoms along the Willamette and Columbia Rivers in Oregon, and in the Puget Sound lowlands and along the lower Columbia River in Washington. The species was rare east of the Cascade Mountains. It may now be extirpated from Washington (USFWS 2008).

Lower Granite Lock and Dam Project lands lack the required plant cover density to support yellow-billed cuckoos. No yellow-billed cuckoos have been documented in the Project area, and given the lack of required habitat, none are expected to be in the area. Activities associated with the Lower Granite Lock and Dam will have no effect on yellow-billed cuckoos. If a yellow-billed cuckoo is found, the Corps will coordinate with USFWS to establish buffer areas to mitigate impacts.

2.6.4 Invasive Species

Vegetation in the Project area also includes a wide array of invasive, noxious, nuisance, and pest species. These species can impact Project operations, reduce habitat value, and impact recreation. In accordance with Executive Order 13112, an invasive species is defined as an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive species may be accidentally transported or deliberately introduced because they are thought to be helpful in some way.

Invasive species are becoming more and more of a management issue for the Project and are requiring more focused efforts, both in upland and riparian areas. False indigo (*Amorpha fruticosa*), for example, is infesting the shoreline in many areas, outcompeting native willow species in many cases, and even blocking access to the river. Reed canary grass (*Phalaris arundinacea*) is another problem species and has taken over areas of siltation, such as at Alpowa HMU where Alpowa Creek empties into the Snake River, out-competing other native riparian vegetation. Other species include purple loosestrife and phragmites (*Phragmites australis*) in areas of deposition or shallow water. A relatively new pest species on Lower Granite is Purple loosestrife (*Lythrum salicaria*). It has infested Swallows Beach area, effectively blocking access to the river, and eliminating recreation opportunities in this area. It has also quickly spread both up and downstream, requiring intensive efforts to contain and treat it. To deal with the pest issues, the Project conducts pest management activities, within budgetary constraints, in accordance with the District's Integrated Pest Management Program (IPMP) for Project operations, natural resource management, habitat management in HMUs, and recreation management. Other pest management

efforts are also conducted for Project operations, such as on the face of the earthen portion of the dam to avoid damage to the dam, and in and around the Lewiston Levees to ensure proper operation and maintenance of the levees.

2.6.5 Ecological Setting

The Natural Resource Management Mission of the U.S. Army Corps of Engineers (Engineer Regulation 1130-2-550, Chapter 2, Paragraph 2-2.a.(1), dated November 15, 1996) states the following:

The Army Corps of Engineers is the steward of the lands and waters at Corps water resources projects. Its 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.

In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance, and restoration practices.

The Corps manages for long-term public access to, and use of, the natural resources in cooperation with other Federal, State, and local agencies as well as the private sector.

The Corps integrates the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life.

In support of this mission statement, the following paragraphs describe the Columbia Plateau ecoregion (EPA 2011) which encompasses

the Project area.

- *Location.* The Columbia Plateau ecoregion ranges between the Cascades to west and Rocky Mountains to the east. An ecoregion is a major ecosystem defined by distinctive geography and receiving uniform solar radiation and moisture.

The Project area is located in southeastern Washington, with small areas extending into central western Idaho.

- *Climate.* The ecoregion has a dry, mid latitude desert and steppe climates. It is marked by hot, dry summers and cold winters. The mean annual temperature ranges from approximately 44°F to 53°F. The frost-free period ranges from 70 to 190 days. As with temperature, the mean annual precipitation ranges widely from about 6 to 23 inches with an average of about 13 inches.

- *Vegetation.* This ecoregion is characterized by sagebrush-steppe and grasslands, which consist of bluebunch wheatgrass, needle-and-thread grass, Sandberg bluegrass, and Idaho fescue. Big basin sagebrush, Wyoming big sagebrush, and antelope bitterbrush are also common. Invasive cheatgrass encroaches on some large areas.

- *Hydrology.* Streams originating in the area are generally ephemeral (temporary) and may only flow several days per year, if at all. Most summer precipitation is evaporated or transpired. Perennial streams and rivers originate in adjacent mountainous ecoregions. Some wetlands and marshes occur, but many have been drained for agriculture.

- *Terrain.* The terrain consists of tablelands of moderate to high relief and irregular plains with open hills. Elevations range from about 196 feet where the Columbia River exits the region to the west, to over 4,900 feet on some hills in the east. Episodic geologic events such as lava flows and massive floods shaped the topography. This region is one of the best examples of plateau

flood basalts, and many areas are underlain by basalt over 5,800 feet thick. Deep loess soils covered much of the plateau. Pleistocene floods cut through the thick deposits of windblown soil, leaving islands of loess separated by scablands and bedrock channels.

- *Wildlife.* Wildlife includes Rocky Mountain elk, white-tail and mule deer, coyote, cougar, black-tailed jackrabbit, ground squirrels, American kestrel, bald and golden eagle, red-tailed hawk, great horned owl, western meadowlark, sage thrasher, savanna sparrow, and rattlesnake.

- *Land Use and Human Activities.* This ecoregion includes cropland with dryland and irrigated agriculture, rangeland for livestock grazing, and wildlife habitat. Some areas are extensively cultivated for winter wheat, particularly in the eastern portions of the region where precipitation amounts are greater. Other crops include barley, alfalfa, potatoes, onions, hops, lentils, and dry peas. Fruit orchards and vineyards are extensive in some areas. Some areas are military and restricted government land. Some areas are tribal land. Larger cities include Yakima, Richland, Kennewick, Pasco, Walla Walla, Hermiston, Pendleton, and The Dalles.

2.6.6 Wetlands

Approximately 7.6 percent (868 acres) of the vegetated lands at the Project are classified as wetlands. Wetlands are further classified as Palustrine Emergent, Palustrine Scrub Shrub, and Palustrine Forest, as described below:

- *Palustrine Emergent* – Wetland areas that support herbaceous, rooted plants covering 30 percent or more of the area. The vegetation is usually dominated by perennial plants for most of the growing season in most years. Sixty-four acres of Palustrine Emergent wetlands are located on Project lands.

- *Palustrine Scrub Shrub* – Wetland areas that support woody vegetation covering 30 percent or more of the area. This type contains shrubs less than 6 meters tall, primarily willows, alders, and dogwoods. Ground cover is typically a mixture of Palustrine Emergent species as described above. Hydric soil is present, but is seasonally flooded. Approximately 317 acres of Palustrine Scrub Shrub wetlands are located on Project lands.

- *Palustrine Forest* – Wetland areas that support woody vegetation covering 30 percent or more of the area. This type contains trees greater than 6 meters tall, primarily black cottonwoods and willows. Ground cover is typically a mixture of Palustrine Emergent and Palustrine Scrub Shrub species, as described above. Approximately 487 acres of Palustrine Forest wetlands are located on Project lands.

2.7 CULTURAL RESOURCES AND CONTEXT

There is ample evidence that people have lived along the Snake and Clearwater Rivers for thousands of years. Their presence is indicated through oral history provided by descendants of the Native American inhabitants and from archaeological site investigations. The archaeological sites found on Project lands and throughout the region represent a full range of lifeways, representing plant, animal, and toolstone procurement, food processing and storage, rock imagery, ceremonial aspects, and habitation sites ranging from small camps to large villages. These areas not only represent long ago activities, they are still of living importance today to affiliated Tribes. A number of historic period sites are also present, including those related to agriculture, transportation, industry, and homesteads. An overview and historic context for Lower Granite Lock and Dam and other projects in the Federal Columbia River Power System (FCRPS), is discussed in a number of documents

and is not detailed in this document (Historical Resource Associates, Inc. 2015, Reid 1995). The FCRPS is a series of hydroelectric power projects in the Columbia River Basin located on the mainstem Columbia River and in several of its major tributaries that provide about one-third of the electricity used in the Pacific Northwest.

Formal ethnographic studies by researchers with the Nez Perce, Palus, and other tribes began in the late 1800s and early 1900s, but the first documented archaeological survey of Corps lands at Lower Granite Lock and Dam was the Smithsonian Institute’s River Basin Surveys in 1948. Twelve archaeological sites were recorded during that initial survey, with additional surveys, salvage excavations, and ethnographic studies conducted by archaeologists from Washington State University and the University of Idaho up to the time of reservoir impoundment (Osborne 1948). Additional sites were identified during later surveys. At the time of publication of the original Lower Granite Master Plan in 1974, the Corps, its contractors, and local universities had just completed excavations at a number of significant sites, including Wawawai, Alpowa, Silcott, and Granite Point (Adams et al 1975; Brauner 1976; Leonhardy 1969; Yent 1976). In addition to those excavations, about two dozen Nez Perce burial sites were tested, and hundreds of graves were relocated by university and Tribal crews (Sprague 1978). The Corps also relocated several historical Euroamerican cemeteries prior to inundation (Schalk and Nelson 2016).

Following dam construction in 1975, surveys were conducted to examine effects to archaeological sites from inundation and document additional archaeological sites (Brauner et al. 1975; Cleveland et al. 1976; Gurcke et al. 1979). A selection of sites was then subjected to test excavations, mostly those located in areas where development of Corps and other facilities were proposed, or where burials

were exposed as a result of shoreline erosion.

During the month of March 1992, the Corps conducted a reservoir drawdown study, during which time Lower Granite reservoir was drawn down 33 feet, exposing archaeological sites that had been covered with water for seventeen years (Center for Northwest Archaeology 1992). Archaeologists from WSU and the Nez Perce Tribe visited eleven archaeological sites and noted effects from erosion (from reservoir effects and development), sediment deposition, and visitor impacts, including looting and artifact collecting (Center for Northwest Archaeology 1992:4.115).

In 1997, funding was made available for Lower Granite Lock and Dam cultural resources management under the FCRPS Cultural Resources Management Program. Program accomplishments include completion of the 2000 Cultural Resources Management Plan (Hicks 2000), ongoing surveys of Corps-managed land to document archaeological sites and Traditional Cultural Properties, site condition monitoring, evaluation of sites to determine eligibility for the National Register of Historic Places (NRHP), management and analysis of archaeological collections and records, and shoreline stabilization. The Payos Kuus Cuukwe Cooperating Group was formed to exchange views, technical information, and planning advice to achieve compliance with NHPA. Membership includes representatives from Federal (the Corps, Bonneville Power Administration (BPA)), Tribal (Confederated Tribes of the Colville Reservation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes and Bands of the Yakama Reservation, the Nez Perce Tribe, and the Wanapum Band), and State (State Historic Preservation Offices in Idaho, Washington, and Oregon) organizations.

Much of the Project land was surveyed or resurveyed during 2000 and 2001 (Cannell

2002). Other inventories, documentation, and testing projects have been conducted prior to infrastructure-related undertakings, including recreation and development projects. As-built construction maps have been digitized, providing locations, and in some cases depths, of disturbance and fill for Lower Granite Lock and Dam construction projects (ESA Adolfson 2009). Several archaeological collections from significant sites that were excavated in the 1960s (and in many cases not analyzed at that time) have been analyzed in recent years, most recently a collection from the Lower Granite Dam construction site (Ogle et al. 2017). Ongoing archaeological site condition monitoring is conducted to determine effects, needs for stabilization, and additional work.

To date, 159 archaeological sites have been documented on Corps lands at Lower Granite Lock and Dam. Three of those sites, Hasotino, Hatwai, and Interior Grain Tramway, have been listed on the NRHP. Hasotino is managed by the Corps, but is also a contributing site to Nez Perce National Historical Park.

Another 10 archaeological sites have been found eligible through concurrence determinations with the State Historic Preservation Office (SHPO), but have not been formally nominated to the NRHP. Eight archaeological sites have been found not eligible for the NRHP through concurrence determinations, and 138 sites are unevaluated. Ninety of the unevaluated sites are inundated and have not been evaluated because limited information is available about whether the site retains attributes that make it eligible for the NRHP.

Traditional Cultural Properties, which includes Historic Properties of Religious and Cultural Significance to Indian Tribes, are areas tied to beliefs, customs, and practices

of a living community. They may coincide with the boundaries of archaeological sites or be comprised of a number of landscape features. Traditional Cultural Properties have been identified at Lower Granite Lock and Dam by the Confederated Tribes of the Colville Indian Reservation, the Nez Perce Tribe, and the Confederated Tribes and Bands of the Yakama Nation. These properties are in the process of being evaluated for NRHP eligibility.

Two buildings at Chief Timothy Park have been documented that are over 50 years old and have been recommended not eligible for the NRHP. The Corps needs to complete concurrence determinations with the Washington SHPO before formally determining their eligibility status. One structure on the Idaho side has been found not eligible through a concurrence determination with the Idaho SHPO. One object, the Washington-Idaho Territorial Marker, has been documented and it is currently unevaluated.

There are multiple structures near Corps land that are owned by other entities and are not included in this document (e.g., road and railroad bridges). One historic building, the Full Gospel Church, is the property of the City of Asotin in Asotin, Washington, but it is surrounded by Corps land. Since the 1970s, the church building has been owned by the City of Asotin following a property disposal by the U.S. Government. The church was listed on the National Register of Historic Places in 1971 due to its historical significance to the local community. The City currently uses the structure for a community center. The disposal deed requires the City to use and maintain the property as a historic monument in perpetuity. If the City cannot meet those obligations, the property would revert to U.S. Government ownership.

Sites at Lower Granite Reservoir have been affected by reservoir-related effects, including

erosion, sediment deposition, development, and recreational activities. Sites have also been affected by unauthorized actions, such as vandalism, looting, and cattle encroachments. The FCRPS Cultural Resource Program provides funding for archaeological survey of previously unsurveyed areas, archaeological site monitoring, and law enforcement contracts with Whitman and Nez Perce Counties for patrols to help protect cultural sites. The Corps has archaeologists on staff that conduct cultural reviews prior to proposed undertakings, following the FCRPS Programmatic Agreement (BPA et al. 2009).

2.8 RECREATION FACILITIES AND ACTIVITIES

The Project provides a variety of water-related and land-based recreation opportunities, and it is expected that the demand for recreation activities in the future will increase. Future recreation activities and increased usage without facility expansion will change the current user experience and could negatively impact the resources.

2.8.1 General Background

As mentioned in Section 1.2.2, Section 4 of the Flood Control Act of 1944 (PL 78-534), as amended in 1946 and 1954 and by Section 207 of the 1962 Flood Control Act (PL 87-874), is the basic authority for the initial recreation development on Lower Granite Lake. Policies derived from provisions of the Federal Water Projects Recreation Act enacted in 1965 (PL 89-72), as amended, guide future recreation development.

Visitation continues to increase as facilities and the area's population also increase. Lower Granite Lock and Dam is one of the most popular recreation locations in the area due to its close

proximity to the cities of Lewiston, Idaho, and Clarkston, Washington. Visitors use the area heavily for boating and fishing on Lower Granite Lake; bicycling, walking and exercising on the Clearwater-Snake River National Recreation Trail; and camping, picnicking, hunting, horseback riding, rock climbing, birding, and sightseeing throughout the project. There were over 2.3 million visitors at the Project in 2015.

2.8.2 Project Access

Vehicular access to Lower Granite Lock and Dam is from Almota Ferry Road in Garfield County and from State Route 194 in Whitman County.

Access to sites along Lower Granite Lake's left bank is via Whitman County Road 900. In the Clarkston, Washington, area, access to Lower Granite Lake sites are primarily via U.S. 12, and further south in the town of Asotin, Washington, access can be gained from State Route 129. In Idaho, access is via U.S. 12/95 and via Tammany Creek Road south of the city of Lewiston.

2.8.3 Recreation Use

Water-Based Recreation

Boating on Lower Granite Lake is a primary activity for many visitors. Much of the boating is related to fishing; however, waterskiing, tubing, wake boarding, jet skiing, sailing, kayaking, and canoeing are also important boating activities. Virtually the entire length of the reservoir is designated as part of the Northwest Discovery Water Trail. Additionally, boating provides an efficient means of transportation and allows hunters to gain access to more remote wildlife habitat areas.

Access to the 48.7-mile long lake is gained through 12 boat ramps located on Corps land. Of the 12 boat ramps, 6 are located on the left bank and 6 on the right. Seven ramps are managed

by the Corps, and 5 are managed by lessees through a real estate instrument. Additionally, two marinas with over 220 slips are operated by lessees in the upper reaches of the lake. Although the lake level only fluctuates only about 5 feet (between 733-738 feet above mean sea level), boating hazards caused by submerged facilities or sedimentation can occur. This problem is more pervasive on the upstream end of Lower Granite Lake near boat ramps that serve the communities of Asotin, Clarkston, and Lewiston. An additional hazard to boaters caused by floating debris, such as floating logs, occurs during the annual spring runoff

Fishing is another major water activity of visitors to Lower Granite Lake. Most anglers fish for steelhead, hatchery spring/summer Chinook salmon, smallmouth bass, and when a season is allowed by State agencies, hatchery fall Chinook salmon. Moreover, fishing for trout takes place at Corps ponds such as Evans, Golf Course, and Lewiston Levee ponds. Trout are stocked by Washington Department of Fish and Wildlife and Idaho Fish and Game. Lastly, bow fishing occurs in accordance with local State regulations in non-recreation areas (i.e., HMUs).

During the hot summer months, swimming is a popular activity. Swimming occurs at the lake's only designated swim area, Chief Timothy Park, and in undesignated areas adjacent to any sandy beach. Typically, the largest concern by swimmers is the lack of beaches along the shoreline of Lower Granite Lake, such as at Chestnut, Hells Gate State Park, and Chief Looking Glass. The Corps completed an Environmental Assessment in 2017 for the restoration of Swallows Beach, a once popular swim area that has been closed since 2001 because of siltation and water quality issues.

Camping

Many visitors to Lower Granite Lake camp at one of the nearly 288 camp sites. Lower Granite offers a diversity of camping opportunities, from highly developed campsites with electricity, water, and sewer to primitive camping where the only amenity is a fire ring and table.

Developed camping takes place at campgrounds and multiple use areas managed by private concessionaires, local and State government through recreation lease agreements. Typically, modest fees are collected for the services provided. Without local partners to operate and maintain these highly developed sites, service to camping visitors would be greatly diminished.

Primitive camping usually takes the form of tent and recreational vehicle camping by those seeking solitude and a more nature-oriented experience. The Corps provides primitive camping at five multipurpose areas located in Garfield and Whitman Counties. Many primitive campers also engage in boating, fishing, and hunting during their stay.

Hunting

Lower Granite Lock and Dam is an important resource for hunting. White-tailed and mule deer are the primary big game species. Upland game bird hunters target turkey, pheasant, chukar, California quail, and mourning dove. Waterfowl hunting is fairly common and takes place in December and January. Over 6,500 acres of Project lands are open to public hunting. Excluding operations lands, recreation lands, and lands near populated areas, most Corps lands are available to hunters. Some restrictions on hunting equipment are necessary for safety near developed or urban areas.

Picnicking

Picnic tables and shelters are located throughout the Project. There are also designated day-use areas that people can use for picnicking. Additionally, Swallows Park offers a large group shelter that, when not used for special events (e.g., weddings, fishing tournaments, sailboat races, walks or runs), which require a special use permit), is available on a first come first serve basis. Overall, the picnic facilities meet the current demand under normal use, though some areas may require updating in the future. Additional picnic shelters may be added to meet future demand.

Trails

The Project provides more than 30 miles of land-based recreation trails. Trail surfaces include pavement, gravel, and dirt. Activity on the urban paved trail system is mostly walking, bicycling, rollerblading, and various forms of exercise. The gravel or dirt trail system allows for hiking, mountain biking, and equestrian use.

The largest trail system on Project lands is the paved Clearwater-Snake River National Recreation Trail. In 1988, this nearly 19-mile paved trail received its designation from the Department of the Interior. This urban trail system has two components:

- The Lewiston Levee Parkway runs atop the Lewiston Levees and connects recreation areas on the Idaho side of the river to the city of Lewiston, Idaho.
- The Greenbelt Trail connects recreation facilities on the Washington side of the river to the communities of Asotin and Clarkston, Washington.

These two trails are connected by the Interstate Bridge (Blue Bridge) and the Southway Bridge. More than half of the visitation to the Project takes place on or near this trail system.

Table 2-2. Clearwater-Snake River National Recreation Trail

Trail	Length (miles)	End Points
Greenbelt Trail	7.6	Port of Clarkston Office Chief Looking Glass Park
Lewiston Levee Parkway	11.3	Lower Goose Pasture near U.S. Highway 12 Hells Gate State Park entrance

Table 2-2 shows the length and end points of these two trail systems that make up the Clearwater-Snake River National Recreation Trail.

The setting for the Hells Gate Trail system, is the opposite of the busy, paved, urban Clearwater-Snake River National Recreation Trail. Visitors use the Hells Gate Trail system within Hells Gate HMU to get away from the crowd and enjoy nature. Hells Gate boasts nearly 13 miles of approved hiking trails with varying degrees of difficulty in the middle of the wildlife habitat area. A major concern for visitors, stakeholders, and the Corps is how to balance wildlife needs and prevent habitat fragmentation, as well as the needs of other user groups such as hunters, while maintaining a trail system that remains enjoyable for the visiting public. The approved trails were developed in cooperation with the Hells Gate Trails Group to ensure the integrity of the habitat was maintained, while balancing the other uses. The Hells Gate Trails Group consists of representatives from the Corps, the Idaho Department of Fish and Game, Idaho State Parks and Recreation, local special interest groups, local clubs, and local citizens, all coming together to find the multi-use balance. The Corps will continue to work with the Hells Gate Trails Group in an attempt to strike that balance.

Sightseeing

A large percentage of visitors to the Project each year come to sightsee and view the Snake River canyon. Sightseeing is often combined with picnicking, hiking, bird watching, wildlife

photography, or other activities.

2.8.4 Zones of Influence

Visitation to Lower Granite Lock and Dam is influenced by the ‘zones of influence,’ which refer to the surrounding population areas in proximity to recreation visitation. The primary zone of influence is within 25 miles of the Project, the secondary reaches out 50 miles, and tertiary extends up to 100 miles from Project recreation locations. **Figure 2-9** identifies the Lower Granite Lock and Dam zones of influence.

Primary

The primary area of influence encompasses the area within 25 miles of the Project. This area includes the cities of Lewiston, Idaho; Asotin, Clarkston and Pullman, Washington; as well as the unincorporated urban areas surrounding these four cities. A vast majority of Project visitors come from within this primary zone of influence.

Secondary

The secondary zone of influence for the project is the area within a 50-mile radius of the Project that is not included as part of the primary zone of influence. This area is within 1-hour traveling time from the Project. This area includes the communities of Pomeroy and Colfax, Washington, and Moscow, Idaho.

Tertiary

The tertiary zone of influence is outside of the 50-mile radius, up to 100 miles from the

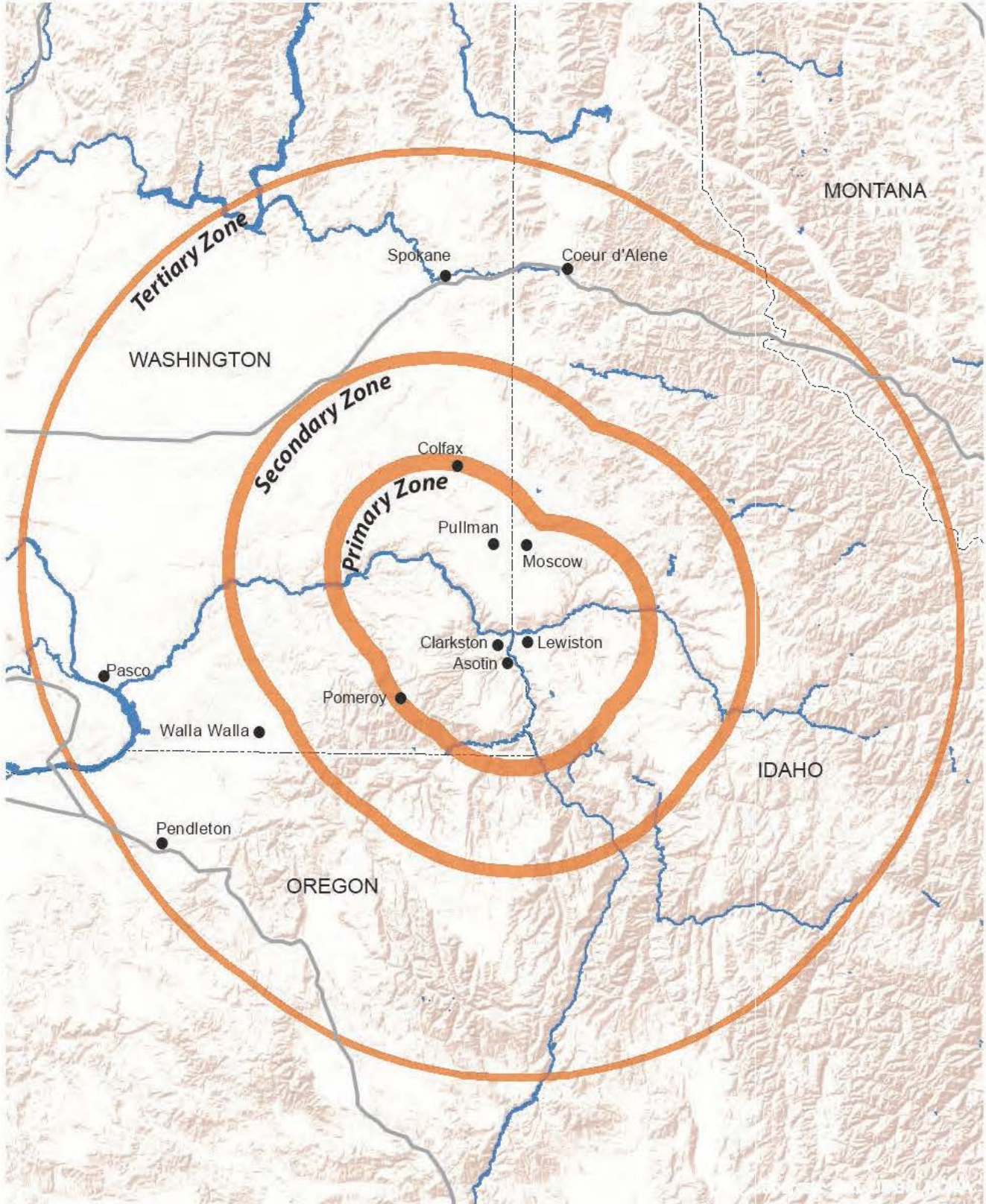


Figure 2-9. Lower Granite Lock and Dam Zones of Influence for Project Visitation

Project. Some visitors will travel up to 2 hours to the Project. They are from the tertiary zone. This area includes Spokane, Washington, which has a population in excess of 300,000.

2.8.5 Project Visitation Profile

The Project provides recreational opportunities for an average of over 1.8 million visitors annually. Lower Granite Lake, its canyon setting, recreation facilities, and close proximity to the Lewiston-Clarkston Valley attracts a high number of visitors.

Over the years as visitor use has increased, facilities have been added and improved Project wide to meet user demands. Population projections for the Whitman, Garfield, and surrounding counties show steady growth over the next 50 years, which will put further demand on existing day-use facilities.

Table 2-3 shows visitation trends collected by the Corps personnel and recorded on the Corps’ nationwide Operation and Maintenance Business Information Link (OMBIL) database. The

methodology used to capture the information in the following table has varied over the period of record shown.

2.8.6 Recreation Analysis

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2013 is statewide report that is an integral part of capturing the history and popular activities to enhance recreation opportunities in Washington. It serves as a management tool to help decision-makers and providers better understand and prioritize the use of recreational resources statewide. The SCORP is used by the Corps to better understand and adapt to the current and future recreation trends and needs specific to the State of Washington.

Washington SCORP Data (2013-2018)

The Washington SCORP identified the current rate of participation among state residents within each of the 16 activity categories listed below in

Table 2-3. Annual Visitation 2006-2015

Year	Visitors
2006 ¹	1,630,936
2007 ¹	1,386,700
2008 ¹	1,338,710
2009 ¹	1,682,042
2010 ¹	2,116,629
2011 ¹	1,756,160
2012 ¹	1,915,804
2013 ²	Null
2014 ³	2,374,919
2015 ³	2,345,452

1. 2006-2012 Source: OMBIL database
2. 2013 data is unavailable due to changes in reported methods.
3. 2014-2015 Engineering Research Development Center (ERDC), Vicksburg, Mississippi

Figure 2-10. Not surprisingly, low-cost activities, easy or less strenuous activities, or activities that can be done close to home have relatively high participation rates. Walking is at the top of the

list, with a 90 percent participation rate among Washington residents, but also near the top are recreational activities (which include fitness activities), nature activities, and picnicking/

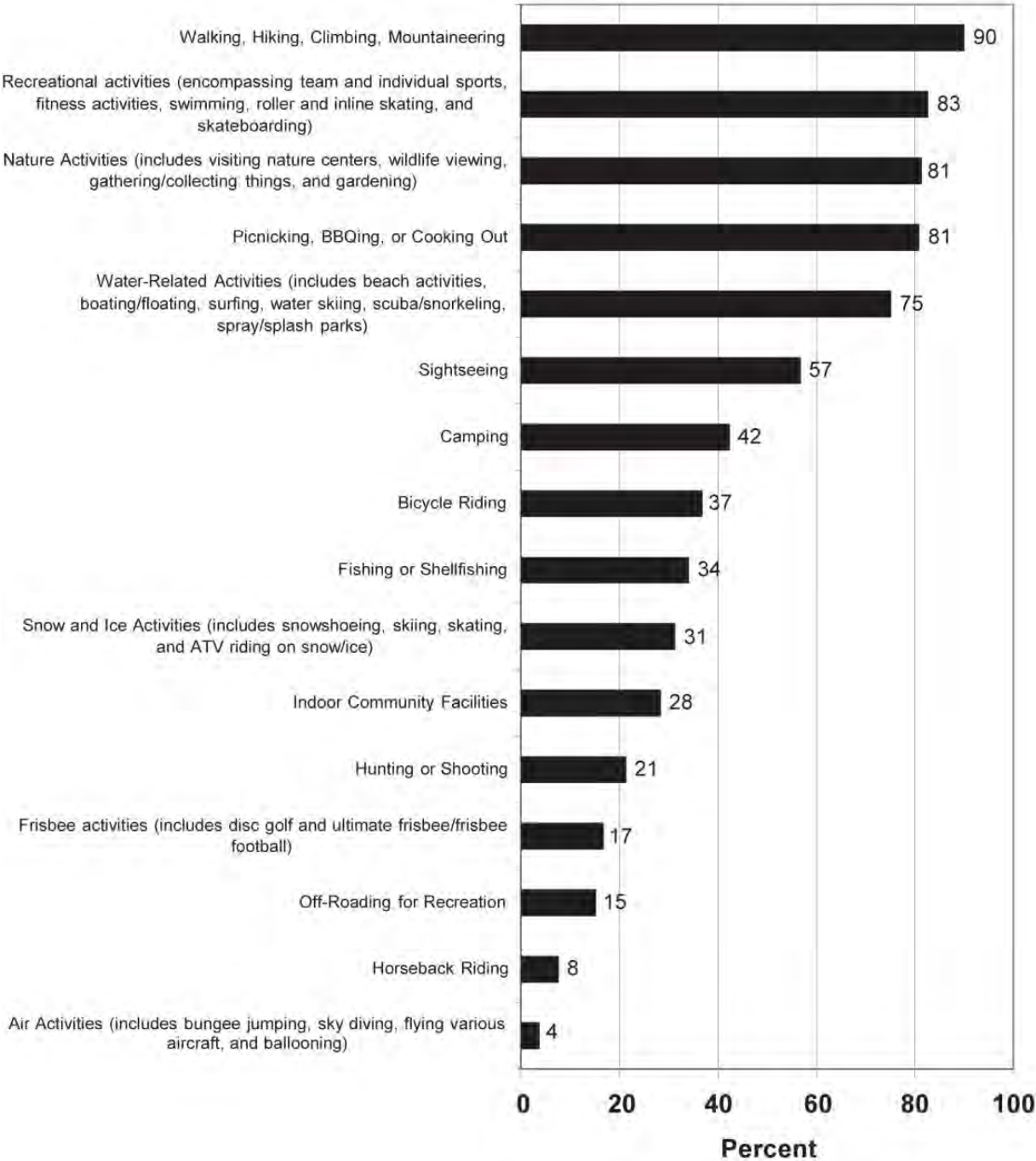


Figure 2-10. Outdoor Recreation Participation Rates by Category

barbecuing. Conversely, more specialized activities—those with high equipment demands or those that require extensive travel—have lower rates, and the very specialized categories such as horseback riding and off highway vehicle use for recreation have the lowest participation rates.

Along with walking and hiking, other core interests involve access to water (swimming, boating) or common leisure time gatherings (picnics and camping). People often use developed trails for activities, especially for bicycling, walking, hiking, or nature viewing and photography. Activities with the highest average number of days of participation are walking without a pet and aerobics/fitness activities. Participants do these activities several times a week. The highest participation rates overall are for picnicking, barbecuing or cooking out, walking,, observing or photographing wildlife, sightseeing, gardening, and hiking. The most intensive users of public facilities and lands are participants in hiking, picnicking/barbecuing/cooking out, wildlife viewing, and swimming in pools or natural waters. Some activities have had a marked increase in ranking since the previous SCORP, including visiting a nature interpretive center, climbing or mountaineering, hunting, inner tubing or floating, and camping in a primitive location. It is also worth noting that picnicking/barbecuing/cooking out went from the ninth-ranked activity in 2002 to the top-ranked activity in 2012. There has been a dramatic increase in participation in many nature-based activities and notable declines in participation in team-based activities.

The public participated in the SCORP planning process through an Advisory Group, Advisory Group meetings open to the public, an online SCORP Town Hall, and a large scale telephone survey. The SCORP evaluates recreation supply and demand on a statewide basis but also

includes a regional analysis. The survey focused on Washington resident’s participation in recreation, their future needs for recreation, their satisfaction or dissatisfaction with outdoor recreation facilities and opportunities, their issues of concern, and any constraints they had in participating in outdoor recreation in Washington.

Washington SCORP Findings

Participation and Satisfaction

Survey results and associated trends point to an increase in nature-based activities. A major focus on recreation planning over the next 5 years should be in providing these nature-based activities for Washington residents and maintaining the integrity of the ecosystems upon which these recreational activities depend. The majority of Washington outdoor recreationists are quite satisfied, with a few small exceptions. In general, dissatisfaction is low for most activities. Nonetheless, the following activities have dissatisfaction rates of at least 20 percent: disc golf opportunities, off-roading facilities and opportunities, and hunting facilities and opportunities. Providers should be aware of those opportunities with which residents are dissatisfied and continue efforts to develop new facilities or to improve existing facilities and opportunities.

Recreation Types

An overwhelming majority of residents are participating in activities that fall under the broad active recreation categories of “walking, hiking, climbing, and mountain biking” (90 percent of residents participated in activities under this category) and “recreational activities” (83 percent), which include activities such as swimming, aerobics, jogging, and running. Findings show that the mean of providers’ answers regarding the percent of their facilities

that support active recreation statewide is 54.04 percent (a B score on the Level of Service). Washington residents participate in a wide variety of outdoor recreation activities. Offering diverse opportunities is important in meeting the demands of underrepresented populations, such as urban residents and minorities.

Recreation Sites and Facilities

Facility capacity measures the percent of demand met by existing facilities, and it appears to be the biggest gap that recreation providers feel. In other words, there is the perception among recreation providers that there is an unmet demand pressure that they are unable to address. Findings from the SCORP indicate that 16 percent of residents said that there were problems with facilities for outdoor recreation in their community. The top problems include a need for more facilities/more availability (35 percent), poor state of facilities (21 percent), restricted access (13 percent), difficulty with access (4 percent), and broken equipment/poor maintenance (4 percent)—all items that pertain directly or tangentially to facility capacity. Level of Service scores show that the highest priorities for planning for and improving outdoor recreation in Washington are facilities capacity and quantity.

Sustainability

When discussing sustainable recreation, it is important to realize that there are two primary and inter-related factors of sustainable recreation: (1) longevity of environmental resources and assets and (2) the longevity of recreational planning and funding. Environmental sustainability focuses on providing recreation designed to minimize environmental impacts and encourage stewardship and ethical use. Recreational sustainability focuses on providing recreation facilities and opportunities that are designed to maximize the useful life of the

facilities and opportunities into the future, thereby encouraging self-supporting design, maintenance, operation, and funding. The second factor is dependent on the first: The longevity of recreation planning cannot be ensured without the preservation of the resource itself. Recreationists are interested in sustainability of the natural environment as part of recreation management, to the degree that they are willing to forego additional recreation opportunities to ensure the sustainability of the resources. Recreation providers should work toward getting recreationists involved through volunteer opportunities supporting environmental sustainability and stewardship initiatives.

User Conflicts

User conflicts are the result of the interplay between several factors, including activity style, resource specificity, mode of experience, and lifestyle tolerance. An example of user conflict would be the tension between a quiet, fast mountain biker coming into contact on a blind curve with horses that can have an instinctive fear response. Conflict management should continue to be an explicit effort for recreation providers using the tools they already apply such as advisory groups, and resident participation. User groups should meet to work out how cooperative sharing can evolve across the array of recreation activities where there are perceived conflicts, perhaps beginning with collaboration among stakeholder groups and the recreation industry to prepare and promote a program of best recreation-use practices (i.e., norms of behavior) their users can follow to improve inter-group relationships in the field.

There was interest among SCORP contributors in zoning to address incompatible recreation activities and sequestering days to separate conflicting dual use (e.g., motorcycles on odd days, mountain bikers on even days) on

the same trail. This is an important consideration, especially where speed-of-use and noise conflicts exist between motorized recreation and non-motorized recreation (e.g., ATVs versus mountain bikes) or even between wheeled recreation and non-wheeled recreation (e.g., mountain bikes versus hikers). Research has shown that this can work. In Washington, a recreation study of user conflict between mountain bikers and other users explored the outcomes of a trial period in which mountain bikers were allowed access to the recreation site on odd-numbered calendar days. The study showed that recreationists “felt safe, had a high level of enjoyment, experienced positive interactions with other trail users, and favored the every-other-day policy over closing or opening the trail full time to mountain bikes.”

2.8.7 Recreational Carrying Capacity

Recreation carrying capacity is a measure of the capability of a recreation resource to provide the opportunity for satisfactory recreation experiences, over a period of time, without significant degradation of the resources. Carrying capacity has two components: social and resource capacity.

Social capacity is the level of density beyond which the user does not achieve a reasonable level of satisfaction. Social carrying capacity is often exceeded on Lower Granite Lake’s beaches during the late summer when beach crowding conditions lead to undesirable visitor satisfaction. User conflicts between equestrian riders, hikers with pets, and mountain bikers also negatively impact social capacity during the winter months at Hells Gate. Available shoreline with sandy beaches and a limited mileage of multipurpose dirt trails reduce the social carrying capacity of the Project.

Resource capacity is the level of a recreation

resource beyond which irreversible biological deterioration takes place, or degradation of the resource makes it unsuitable or unattractive for recreational use. Resource capacity is usually a seasonal or long term issue, as most areas will tolerate some short-term overuse without significant adverse effects. Resource capacity must be accommodated in the design and location of facilities, as well as the regulation of use.

Using data and methodology from U.S. Outdoor Recreation Participation Projections 2010 to 2060 by J.M. Bowker, Ashley Askew, and Ken Cordell, along with the Washington Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2013-2018, future outdoor recreation demand was calculated for Lower Granite Lock and Dam. **Table 2-4** shows the future projected visitor participation based on national data and trends.

Projections for recreation demand at the Project over the next 50 years are shown in **Figure 2-11**. Projections are based on several scenarios and subject to change. Visitor use is projected to remain fairly steady or slightly increase over the next 50 years.

The concept of carrying capacity, as applied to recreation, implies that an optimum limit exists for the amount of recreation activity that may occur before detrimental effects inhibit a quality experience for participants and deplete environmental resources. In this sense, capacity is used as the ultimate determination for the extent of recreational development. At the Project, resource limitations justify the establishment of reasonable capacities.

Developed sites are adequate to serve visitors today and into the future with maintenance, some facility improvements, and limited development. Hunting and fishing needs are currently met and future capacity

Table 2-4. Project Projected Future Visitor Participation

Activity	2020	2030	2040	2050	2060
Visiting Developed Sites	498,642	540,407	582,172	623,936	665,701
Backcountry Activities	427,154	463,636	500,119	536,602	573,085
Boating	242,899	263,308	283,718	304,127	324,537
Hunting	160,028	173,677	187,326	200,975	214,625
Fishing	276,635	299,879	323,123	346,367	369,612
Swimming	259,527	259,527	262,122	269,986	283,485
Other	225,188	244,319	263,450	282,581	301,713
TOTAL	2,090,071	2,244,753	2,402,030	2,564,576	2,732,757

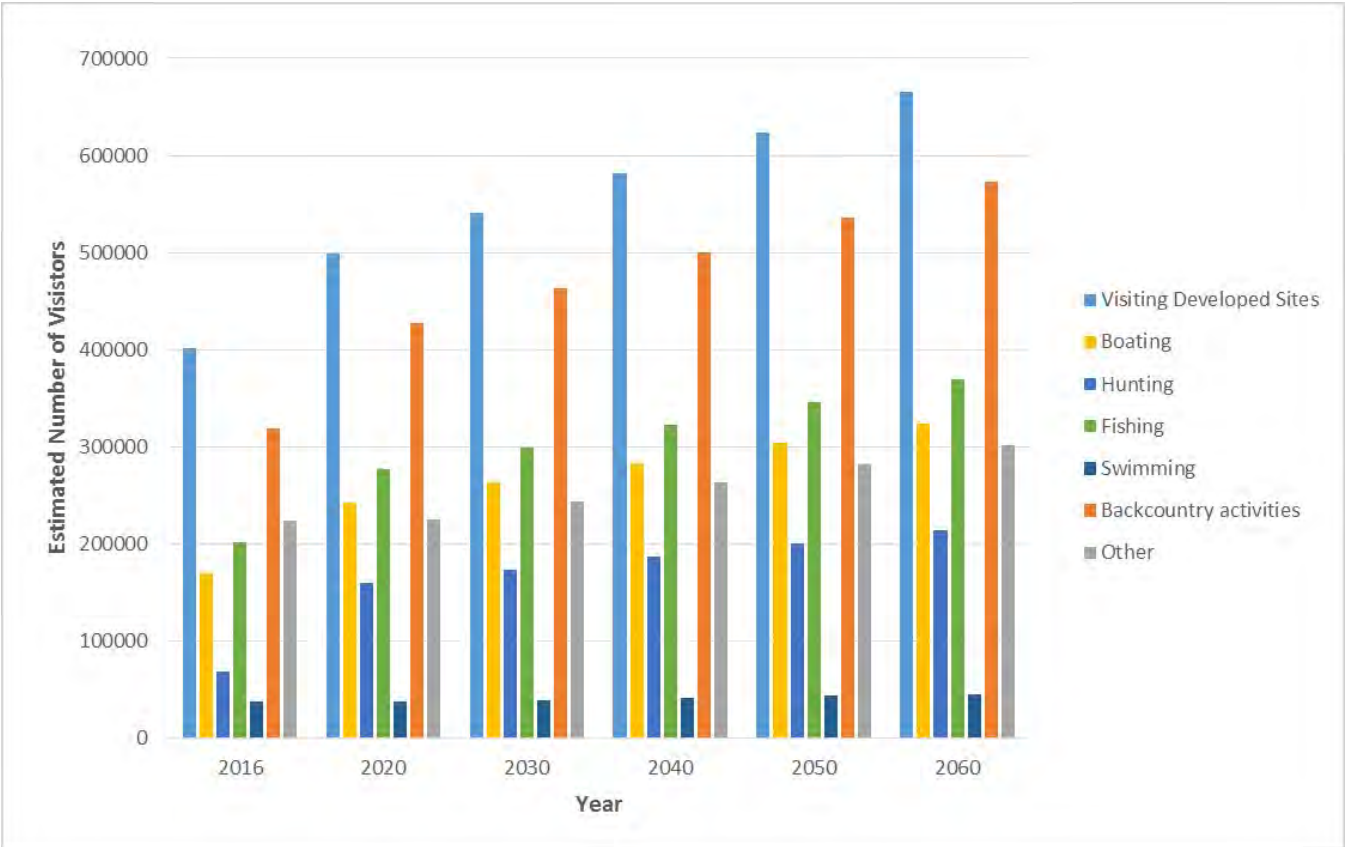


Figure 2-11. Projected Future Visitation

could be accommodated with minor changes in management practices. At the present time, boat access is adequate, but if dredging of the launch basins is not performed, capacity will be reached, and the Corps will not be able to provide adequate access to the water. Swimming and backcountry activities have reached social capacity. Restoration of Swallows Beach and the work with the user groups of Hells Gate that is currently underway will be needed to delay undesirable visitor satisfaction.

2.9 REAL ESTATE AND ACQUISITION POLICY

Under Public Law 79-14, Congress authorized the government to originally purchase lands in 1945 for the primary purposes of navigation and irrigation, with authority for power development where determined appropriate. Since that time, subsequent legislation has authorized other project purposes, including recreation and fish and wildlife management. Over the life of the project, the Corps analyzes lands for its needs in relation to the Project, and approximately 1,396 acres of land that had been designated as no longer needed for the Project has been disposed.

The U.S. Government currently owns 11,768 fee acres within the Project boundary, and has easements and reservation rights on 1,190 acres. The majority of the Project lands are centered along the shorelines of the Snake and Clearwater Rivers, with some large parcels of land that stretch inland. The Corps has management rights and responsibilities on these U.S. Government owned lands. Of these lands, 3,335.81 acres were purchased under the Lower Snake River Fish and Wildlife Compensation Plan and transferred to the Project as mitigation for lost habitat and hunter opportunity from construction of lower Snake River dams.

2.10 PERTINENT PUBLIC LAWS, REGULATIONS, AND POLICIES

Rules and regulations governing the public use of water resources development projects administered by the Corps are contained in Title 36, Part 327, of the Code of Federal Regulations. Other authorities specifically related to the management of recreation and public access are found in Public Laws; Executive Orders (EO); and Corps Engineer Regulations, Engineer Manuals, and Engineer Pamphlets, as listed below. A list of applicable Federal statutes is included in **Appendix A**, Lower Granite Lock and Dam Master Plan Environmental Assessment.

Laws applicable to recreation and public access.

- PL 78-534 Flood Control Act of 1944, 22 December 1944
- PL 79-526 Flood Control Act of 1946, 24 July 1946
- PL 88-578 Land and Water conservation Fund Act of 1965, 3 September 1964
- PL 89-72 Federal Water Project Recreation Act of 1965, 9 July 1965
- EO 11644 Use of Off-Road Vehicles on the Public Lands, 8 February 1972 (amended by EO 11989)
- EO 11989 Off-Road Vehicles in Public Lands, 24 May 1977 (amends EO 11644)
- EM 1110-1-103 Design for the Physically Handicapped, 15 October 1976
- EM 1110-2-410 Design of Recreation Areas and Facilities Access and Circulation, 31 December 1982
- EP 310-1-6 Graphic Standards Manual, December 1980 (Change 1)
- ER 1105-2-100 Planning Guidance Notebook, 22 April 2000

- ER 1110-1-102 Design for the Physically Handicapped, 15 October 1976
- ER 1110-2-400 Design of Recreation Sites, Areas, and Management Policies, 7 July 1972 (Change 1)
- ER 1120-2-400 Recreation Resources Planning, 1 November 1971 (Changes 1 through 3)
- ER 1130-2-400 Recreation - Resource Management of Civil Works Water Resource Projects, 1 October 1983
- ER 1130-2-540 Project Operations - Environmental Stewardship Operations and Maintenance Guidance and Procedures, 15 November 1996
- ER 1130-2-550 Recreation Operations and Maintenance Policies, 15 November 1996 revised 15 August 2002
- ER 1165-2-400 Recreation Planning, Development, and Management Policies, 3 August 1970

Treaties between the United States and regional mid-Columbia/lower Snake River Tribes document agreements reached between the Federal Government and the Tribes. In exchange for Native American Tribes ceding much of their ancestral land, the Government established reservation lands and guaranteed that it would respect the treaty rights, including fishing and hunting rights. These treaties, as well as statutes, regulations, and national policy statements originating from the executive branch of the Federal Government provide direction to Federal agencies on how to formulate relations with Native American Tribes and people. Treaties with the Nez Perce (Treaty of June 11, 1855, Treaty with the Nez Percés, 12 Stat. 957 (1859); Treaty of June 9, 1863, Treaty with the Nez Percés, 14 Stats. 647 (1867)) explicitly reserved unto the Tribe certain rights, including the exclusive

right to take fish in streams running through or bordering reservations, the right to take fish at all usual and accustomed places in common with citizens of the territory, and the right of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open unclaimed lands. These reserved rights include the right to fish within identified geographical areas. The Tribe also owns and manages the Clearwater River bed within the reservation boundaries.

2.11 ENVIRONMENTAL CONSIDERATIONS

This Master Plan will evaluate the impacts of land use classification changes. More detailed information relating to annual operations and management can be found in the Lower Granite Operational Management Plan (OMP). Implementation of individual actions from the OMP requires separate environmental compliance evaluations. The Environmental Assessment conducted as part of the development of the 2018 Master Plan is included in **Appendix A**.



SECTION 3. RESOURCE GOALS AND OBJECTIVES

Resource use goals provide the overall framework that guides the use of resources administered by the Corps at a project site. The goals and objectives in the Lower Granite Master Plan are specific to Lower Granite Lock and Dam and its individual areas and specify attainable options for resource development and management. These goals have been developed through study and analysis of regional and local needs, public input, resource capabilities, and resource potential, and they are formulated to guide and direct the overall resource management program.

3.1 RESOURCE GOALS

The resource goals are included within four categories, as indicated below:

Project Operations

- Continue to safely, effectively, and efficiently provide benefits to the public consistent with the authorized project purposes.

Natural and Cultural Resources Management

- Allow public access and use of Corps-owned land, as appropriate.
- Protect and preserve archeological and historical sites.
- Protect and enhance fish and wildlife habitat.
- Control noxious weeds and other undesirable weed species.

Recreation and Interpretation

- Provide high quality, safe recreational facilities year-round to a wide segment of the public, including individuals with disabilities.
- Minimize conflicts between user groups and Corps operational requirements.

Coordination

- Maintain communication and coordination with appropriate Indian Tribes; Federal, State, and local agencies; and citizen groups and organizations for management of the manmade and natural resources at the Project.

3.2 RESOURCE OBJECTIVES

Resource Objectives are clearly written statements that respond to identified issues and specify measurable and attainable activities for resource development and/or management of the lands and waters under jurisdiction of the Walla Walla District at Lower Granite Lock and

Dam. The objectives stated in this Master Plan support the goals of the Master Plan and the following Environmental Operating Principles:

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all Corps activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

The objectives are consistent with authorized Project purposes, Federal laws and directives, and they take into consideration regional needs, resource capabilities, State Comprehensive Outdoor Recreation Plans, cultural and natural resources significant to regional Tribes, and public input. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan.

To address specific management needs, the Resource Objectives discussed in this section are divided into three categories—General, Recreation, and Environmental Stewardship.

3.2.1 GENERAL RESOURCE OBJECTIVES

3.2.2 Safety and Security

Objective: Provide use areas and facilities that are safe and free of crime.

Discussion: Developed areas designated for recreation use will be evaluated regularly for safety. Any conditions that have been determined unsafe will be evaluated, and feasible corrective actions will be implemented in accordance with Engineer Manual 385-1-1.

3.2.3 Aesthetic Resources

Objective: Plan all management actions with consideration given to landscape quality and aesthetics.

Discussion: Corps regulations and guidance requires that the Corps considers and provides an aesthetically pleasing environment for the public. Visitors are attracted to the vistas, rolling topography, and water bodies that create high visual quality at the Project. In order to create a quality recreation experience, it is important that planned improvements be designed and maintained so that visual resources associated with the Project will be protected, preserved, and maintained to the maximum extent possible.

3.2.4 Facility Management

Objective: Ensure all current and future facilities are maintained and meet Federal and State design standards.

Discussion: All new or remodeled facilities will meet current standards. Upgrade and replacement of existing facilities will comply with Corps policy.

3.2.5 Real Estate Management

Objective: Prevent unintentional trespass and negative impacts associated with encroachments on Government property while allowing State, County, municipal, and private entities opportunities to provide public recreation services and revenue-generating opportunities.

Discussion: Periodic boundary inspections will be conducted and encroachments and trespasses resolved at the lowest level possible. Unmarked monument boundaries and fence monument boundaries will be surveyed where feasible. Real estate proposals and requests will be compatible with Project purposes and minimize impacts to environmental and cultural resources. Lease agreements will be in compliance.

3.3 RECREATION RESOURCE OBJECTIVES

3.3.1 Land and Water Universal Access

Objective: Provide use areas and facilities that are accessible for all Project visitors.

Discussion: Developed areas designated for recreation use will be evaluated regularly for accessibility. When developing new or rehabilitating existing recreation facilities/opportunities, effort should be made to comply with reasonable Americans with Disabilities Act (ADA) (PL 101-336) accommodations. In addition, special emphasis should be placed on programs that increase participation in outdoor activities for people with physical, developmental, and sensory disabilities.

3.3.2 Interpretive Services and Outreach Program

Objective: Interpretive service will focus on agency, District, and Project missions, benefits, and opportunities. Interpretive services at the

Project will be used to enhance public education and safety through promoting public awareness, understanding, and appreciation of the Project and its resources.

Discussion: The Lower Granite Interpretive Services and Outreach Program (ISOP) includes the management of public affairs, community relations, marketing, publications, tourism, special events, and a visitor center. The Project will provide community outreach by participating in fairs and public events; providing interpretive displays and programs at the visitor center, day-use areas, community organizations, and the Chamber of Commerce; and releasing information to the press, etc. Interpretive displays and programs should highlight several of the following subjects:

- The Corps.
- Land use classifications.
- History.
- Natural history.
- Project authorized purposes and public benefits.
 - Impacts of the Project (historical, cultural, ecological).
 - Historical and traditional uses of the area by regional Tribes.
 - Recreation opportunities.
 - Wildlife and fish associated with Project lands and waters, and opportunities to passively and actively utilize these resources.
 - Water safety.
 - Ongoing management activities.
 - Challenges and possible solutions.

Opportunities exist to partner with local Tribes and other groups in the development of these displays and programs.

3.3.3 Recreation Optimization and Sustainability

Objective: Utilize leveraged resources when possible to maintain and improve recreation facilities that reduce operations and maintenance costs while meeting public demand.

Discussion: Project staff will promote community involvement through stakeholder meetings. Challenge cost share and cooperative agreements will be utilized to leverage additional resources, and a robust volunteer program will be maintained to accomplish additional work.

3.3.4 Quality Outdoor Recreation in Urban Settings (Intensive Use)

Objective: Operate and maintain day-use facilities, as well as develop new facilities that meet public demand, to provide opportunities for multiple user groups in an urban setting.

Discussion: Day-use activities that occur in the urban areas of Lower Granite Lock and Dam account for about two-thirds of the 2.3 million visitors each year. Day-use activities include picnicking, fishing, birdwatching, nature study, cycling, jogging, dog walking, boating, swimming, and large group events. In order to meet current and future need, Project staff will need to maintain and improve existing facilities, as well as manage the special events (which requires a special use permit) in a manner consistent with Engineering Regulations and Corps Headquarters guidance.

3.3.5 Quality Outdoor Recreation in Rural Settings (Low Density Use)

Objective: Operate and maintain multipurpose facilities, as well as develop new facilities, that meet public demand and provide opportunities for multiple user groups in a rural setting.

Discussion: Dispersed recreation activities that occur in the rural areas of the Project account for about one-third of the 2.3 million visitors each year. Continuing efforts to provide dispersed recreation will allow visitors to participate in activities such as boating, primitive camping, fishing, hunting (in approved areas), horseback riding, hiking, nature study, bird watching, and wildlife photography. Managing user expectations and developing creative solutions in low density recreation areas will remain important as visitor use continues to increase. To enhance the quality of recreation opportunities, Project staff will continue to enforce 14-day camping limits (within a 30-day period) to prevent habitation or squatting as per Title 36 of the Code of Federal Regulations.

3.4 ENVIRONMENTAL STEWARDSHIP RESOURCE OBJECTIVES

3.4.1 Riparian and Wetland Protection

Objective: Protect and limit impacts to wetlands and riparian corridors on the Project in conjunction with Project missions, water quality, and fish and wildlife benefits.

Discussion: Wetlands and riparian habitat are of high ecological importance within the watershed. No unnecessary removal or alteration of the systems will be promoted.

3.4.2 Fish and Wildlife Habitat Management

Objective: Conserve, protect, restore, and/or enhance habitat and habitat components important to the survival and proliferation of threatened, endangered, special status,

regionally important, and Lower Snake River Compensation Plan species and habitat on Project lands.

Discussion: Over the last 40-plus years, improvements have been made to enhance fish and wildlife habitat. Maintenance of existing and future habitats is critical to sustain a healthy ecosystem now and in the future.

3.4.3 Cultural Resources Management

Objective: Carry out legal requirements of the NHPA in support of existing and ongoing work around Lower Granite Lock and Dam.

Discussion: Planning and development will include considerations to protect and preserve culturally sensitive sites. Cultural resource review will be coordinated with District specialists, who will follow laws and guidelines for cultural review according to Federal law and consult with SHPO and THPO/Tribes as required.

3.4.4 Integrated Pest Management

Objective: Minimize negative impacts to native flora and fauna and damage to Government facilities by reducing and/or eradicating invasive and nuisance species on Project lands.

Discussion: Reducing and restricting the spread of invasive and nuisance species will be achieved by monitoring, assessment, and an integrated pest management approach to treatment, which includes chemical, mechanical, and biological control methods, as well as planting with native plant species.

3.4.5 Fire Management

Objective: Minimize the negative effects of wildfires, including impacts to Federal property and the recreating public.

Discussion: Minimize the threat of wildland fire by enforcing the fire ban and reducing fuel load through mowing. Efforts will be made to restore lands damaged by wildland fire. Project personnel are currently working on a prescribed burning plan that can be used as a tool to enhance wildlife habitat using methods such as prescribed burning and mowing.



SECTION 4. LAND ALLOCATION, LAND CLASSIFICATION, AND PROJECT EASEMENT LANDS

This section identifies and describes the land allocation categories and the land classifications at Lower Granite Lock and Dam under this 2018 Master Plan, including the number of acres and the primary and secondary uses for each classification. It also contains a summary of changes to land classifications since the 1974 Lower Granite Master Plan.

4.1 LAND ALLOCATION

Land allocation refers to categorizing lands according to the congressionally-authorized purposes for which Project lands were acquired. Chapter 3 of Engineer Pamphlet 1130-2-550 defines these categories as Operations, Recreation, Fish and Wildlife, and Mitigation, as described below:

- *Project Operations* – These are lands acquired for the congressionally authorized purpose of constructing and operating the Federal Project for the purposes of hydropower, navigation, and incidental irrigation.
- *Recreation* – These are lands acquired specifically for the purpose of recreation.
- *Fish and Wildlife* – These are lands acquired specifically for the purpose of managing or protecting fish and wildlife.
- *Mitigation* – These are lands acquired or designated specifically for the congressionally authorized purpose of offsetting losses associated with development of the Project.

Lands associated with Lower Granite Lock and Dam were originally purchased under the Project Operations allocation. In subsequent years, property was also purchased and allocated under Mitigation and Fish/Wildlife.

4.2 LAND CLASSIFICATION

All lands acquired for the Project are further classified to provide for development and resource management consistent with authorized purposes and other Federal laws. Land classification designates the primary use for which Project lands are managed. The classification process considers public input, regional and Project specific resource requirements, and suitability. Land classifications established in Engineer Pamphlet 1130-2-550

Table 4-1. Land Classification Nomenclature and Acreage in 1974 Lower Granite Master Plan Compared to Conditions in 2017

1974		2017	
Land Classification Nomenclature	Acres*	Land Classification Nomenclature	Acres*
Project Operations	704.4	Project Operations	542.0
Recreation Low Density	1,006.3	Multiple Resource Management (MRM) - Low Density Recreation	200.0
Recreation High Density	540.2	High Density Recreation	842.3
Wildlife Management	2,404.4	MRM-Wildlife Management	757.5
		MRM-Vegetation Management	972.6
		MRM-Future or Inactive Recreation Areas	32.2
Mitigation		Mitigation	5,162.6
Unknown/Natural Area	50.3	Environmentally Sensitive Areas	117.0
Total Acres	4,705.6		8,626.2

*Numbers of acres listed under land classification categories were summarized from the Corps GIS system and may be off by several tenths of an acre at each site.

include the following six categories:

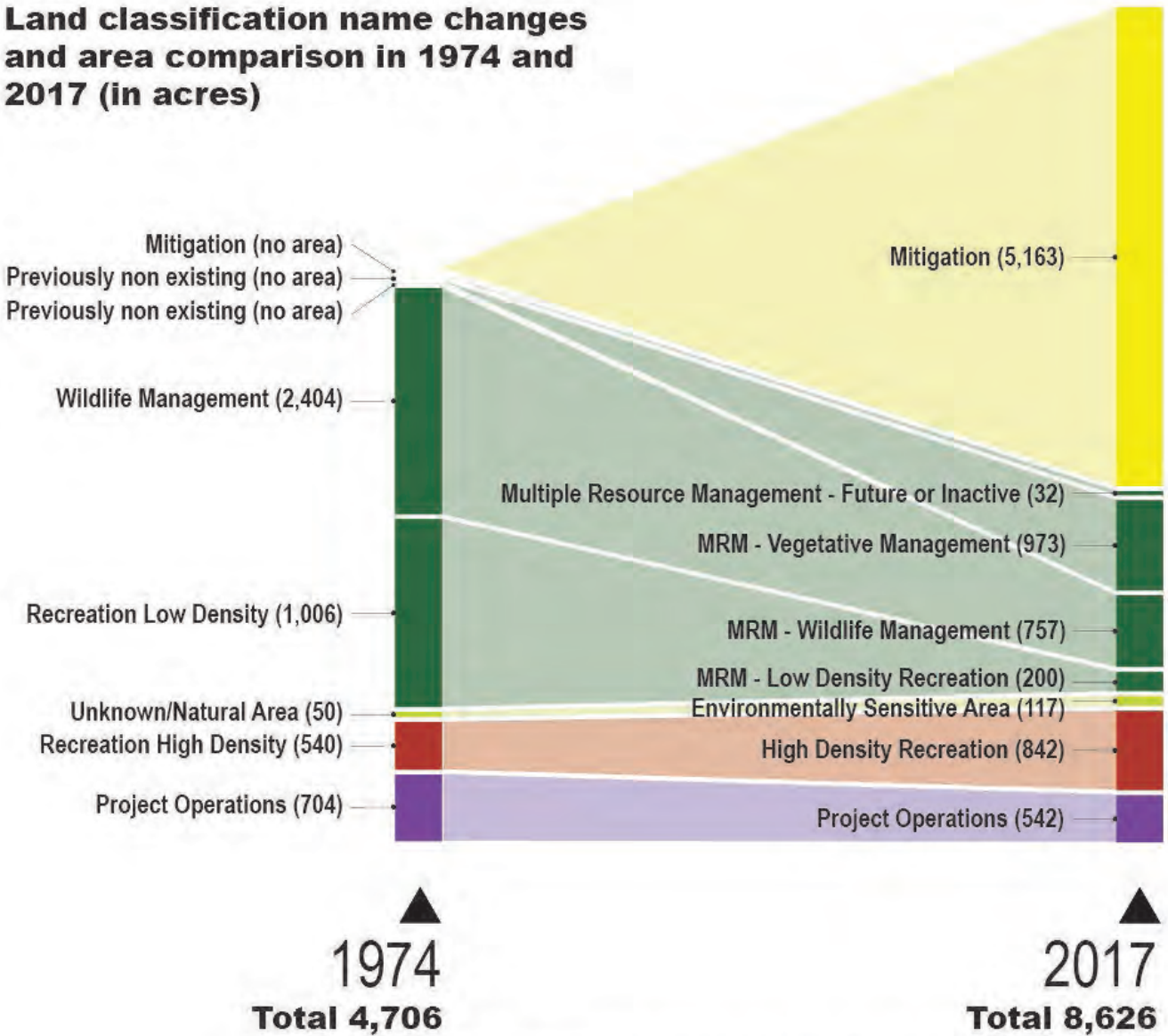
- Project Operations
- High Density Recreation
- Mitigation
- Environmentally Sensitive Areas
- Multiple Resource Managed Lands
- Water Surface

Section 4.2.1 provides a brief overview of the land classification changes that have occurred from 1974 to 2017. Section 4.2.2 shows how the Project land is classified under the 2018 Master Plan and discusses the management and use of the lands assigned to each land classification, in connection with the appropriate resource objectives identified in Section 3.

4.2.1 Land Classification Changes from 1974 to 2017

Lower Granite Lock and Dam land classifications have undergone several changes since the original Master Plan was developed in 1974. **Table 4-1** identifies the total acres for each classification that changed between 1974 and 2017, as well as the changes to the nomenclature that resulted from a recent update to Engineer Pamphlet 1130-2-550. The majority of land acquired between 1974 and 2017 is a result of lands purchased to meet mitigation requirements under the Lower Snake River Compensation Plan. These mitigation lands were never updated in the Master Plan through the supplement process. A supplement is a minor change to a master plan such as a change in land classification or facility footprint. Supplements are prepared as often as necessary to ensure master plans remain relevant. **Figure 4-1** is a visual representation of the information provided in **Table 4-1**.

Land classification name changes and area comparison in 1974 and 2017 (in acres)



Area units are acres. Areas are rounded and their sums may differ slightly from totals.

Figure 4-1. Changes in Land Classification from 1974 to 2017

The land classification changes that occurred between 1974 and 2017 are reflected in **Tables 4-2** and **4-3**. **Table 4-2** shows the land classification changes that were documented in master plan supplements between 1978 and 2013. **Table 4-3** shows the land classification changes that were made as a result of the Lower Snake River Compensation Plan or real estate actions.

4.2.2 Proposed Land Classifications for the 2018 Master Plan

An interdisciplinary team evaluated the Project operations, resource capabilities, as well as public input to determine the land classifications for Lower Granite Lock and Dam. This section identifies how lands are classified

under the 2018 Master Plan and provides an explanation for each of the land classifications, including the applicable primary and secondary uses. **Table 4-4** identifies each of the land classifications and the number of acres at the Project. **Appendix D** contains the maps for these classifications. **Table E-1** and **E-2 (Appendix E)** identify the specific land classification changes by management area between 2017 and the 2018 Master Plan.

4.2.2.1 Project Operations

Lands required for the operation and maintenance of the dam and reservoir, associated structures, administrative offices, maintenance compounds, and other areas are classified as Project Operations. Where

Table 4-2. Land Classification Changes Documented in Master Plan Supplements

Supplement Number	Date	Acres	Explanation*
1	January 16, 1978	41.3	Reclassify Port of Wilma from Project Operations to Wildlife Management in 1978 and then sold to Port of Wilma in 1995.
1.1	July 12, 1983	46.0	Reclassify Asotin Slough from Project Operations to Wildlife Management (this site was a potential damsite).
2	August 20, 1984	650.0	Reclassify Hells Gate HMU from High Density Recreation to Wildlife Management to meet LSRFWCP requirements for Idaho.
3	October 20, 1987	27.0	Reclassify Port of Clarkston from Project Operations to High Density Recreation for Granite Lake Park, RV Resort, and Golf Driving Range.
4	August 3, 1998	7.6	Reclassify North Lewiston Boat Ramp from Project Operations to High Density Recreation for County to allow facility and landscaping improvements.
5	1989	5.3	Reclassify Swallows Park Forest Service Office from Project Operations to High Density Recreation for establishment of Forest Service Office.
6	2013	3.4	Reclassify Corps Operations Yard from Project Operations to High Density Recreation to allow Port of Clarkston to expand RV Park. The Port of Clarkston did not take action during the agreed upon timeframe, and the land reverted back to Project Operations. This Master Plan update will complete the documentation of that reversion back to Project Operations.

*The current classification nomenclature is used in these explanations even though the changes occurred when the previous nomenclature was in effect.

Table 4-3. Land Classification Changes and Land Purchases between 1974 and 2017 Not Part of Formal Supplements

Management Area	Acres	Classification From/To	Explanation*
Chief Timothy HMU	64.3	Wildlife Management to Mitigation	LSRFWCP
Hells Gate HMU	604.2	Wildlife Management to Mitigation	LSRFWCP
Kelly Bar HMU	458.6	Wildlife Management to Mitigation	Purchased for LSRFWCP
Knoxway Canyon HMU	303.5	Low Density Recreation to Mitigation	LSRFWCP
Lower Goose Pasture HMU	73.1	Wildlife Management to Mitigation	Purchased for LSRFWCP
Moses HMU	30.9	Wildlife Management to Mitigation	LSRFWCP
Nisqually John HMU	3030.1	Wildlife Management to Mitigation	Purchased for LSRFWCP
Sheep Gulch HMU	200.4	Wildlife Management to Mitigation	LSRFWCP
Transmission Line HMU	232.3	Wildlife Management to Mitigation	LSRFWCP
Upper Goose Pasture HMU	42.3	Wildlife Management to Mitigation	Purchased for LSRFWCP
Wawawai HMU	90.3	Wildlife Management to Mitigation	LSRFWCP
Alpowa HMU	33.2	MRM-Wildlife to Environmentally Sensitive Area	Swallows Beach Mitigation with Washington Department of Ecology
Asotin Creek	7.1	MRM-Wildlife to Environmentally Sensitive Area	Swallows Beach Mitigation with Washington Department of Ecology
Knoxway Canyon	18.4	MRM-Wildlife to Environmentally Sensitive Area	Swallows Beach Mitigation with Washington Department of Ecology

Note: This table includes new lands purchased under the LSRFWCP.

1. The current classification nomenclature is used in these explanations even though the changes occurred when the previous nomenclature was in effect.

Table 4-4. Land Classification by Acres for the 2018 Master Plan

Land Classification	Acres
Project Operations	366.2
High Density Recreation	804.5
Mitigation	5,545.0
Environmentally Sensitive Areas	111.3
MRM-Low Density Recreation	44.7
MRM-Wildlife Management	1,738.0
MRM-Future or Inactive Recreation Area	27.0
Total	8,636.7

Table 4-5. Project Operations, 366.2 Acres

Primary Use	Secondary Uses*
Manage land required for the operation and maintenance of the dam and reservoir.	<p><i>Wildlife Management</i></p> <ul style="list-style-type: none"> -Ecological restoration projects -Other similar activities <p><i>Low Density Recreation</i></p> <ul style="list-style-type: none"> -Hunting/Fishing -Hiking -Picnicking -Sightseeing and nature observation -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

compatible with the operational requirements, this land may be used for wildlife habitat management and low density recreational uses. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with operational requirements. Some Project Operations lands are closed to public access for safety or security reasons, while other areas may be subject to closure for operational requirements or other purposes. **Table 4-5** contains a listing of primary and secondary uses on lands classified under Project Operations.

4.2.2.2 High Density Recreation

Lands developed for intensive recreational activities by the visiting public are included in the High Density Recreation land classification. Low density recreation and wildlife management activities that are compatible with intensive recreation use are acceptable. No agricultural uses are permitted on these lands except on an interim basis for the maintenance of scenic or open space values. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with recreation use. Hunting is not allowed on land classified as High Density

Recreation, although fishing is an appropriate non-conflict recreational activity. **Table 4-6** contains a listing of primary and secondary uses on lands classified under High Density Recreation.

4.2.2.3 Mitigation

Only land identified, purchased, and/or allocated under the Mitigation land allocation can be included under the Mitigation land classification. It is specifically designated to offset losses associated with the development of a project. At Lower Granite Lock and Dam, Mitigation lands are associated with wildlife habitat purchased and developed under the Lower Snake River Fish and Wildlife Compensation Plan. Development of recreation facilities in Mitigation areas may be limited or prohibited to ensure that the lands are not adversely impacted. Manmade intrusions (power lines, non-project roads, and water and sewer pipelines) are not permitted on lands classified under Mitigation. **Table 4-7** contains a listing of primary and secondary uses on lands classified under Mitigation.

Table 4-6. High Density Recreation, 804.5 Acres

Primary Uses	Secondary Uses*
Manage land for developed recreation sites. -Picnicking -Swimming -Fishing -Sightseeing and nature observation -Nature/Interpretive trails -Hiking -Bicycling -Horseback riding -Playgrounds/Games/Sports/Other -Boat ramps	<i>Wildlife Management</i> -Ecological restoration projects <i>Low Density Recreation</i> -Non-motorized trails -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

Table 4-7. Mitigation, 5,545 Acres

Primary Use	Secondary Uses*
Manage habitat under the LSRFWCP.	<i>Wildlife Management</i> -Ecological restoration projects -Other similar activities <i>Low Density Recreation</i> -Non-motorized trails -Hunting/Fishing -Hiking -Picnicking -Sightseeing and nature observation -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

4.2.2.4 Environmentally Sensitive Areas

Environmentally Sensitive Areas are areas identified with scientific, ecological, cultural, or aesthetic features, or that are otherwise protected by laws; this classification is not limited to just land. Typically, limited or no development for public use is allowed. Manmade intrusions (power lines, non-project roads, and water and sewer pipelines) are not permitted on lands classified as environmentally sensitive. Activities designed to promote and improve special features identified in the area are allowed, along with education and interpretation. Development of recreation facilities in Environmentally Sensitive Areas may be limited or prohibited to ensure that the lands are not adversely impacted. **Table 4-8** contains a listing of primary and secondary uses on lands classified under Environmentally Sensitive Areas.

4.2.2.5 Multiple Resource Management Lands

The Multiple Resource Management (MRM) Lands classification allows for designation of a predominate use with the understanding that other compatible uses may also occur in the classification. Total MRM Lands for the Project is approximately 1,809.7 acres and is divided into subclassifications of Low Density Recreation, Wildlife Management, Vegetation Management, and Future or Inactive Recreation Areas.

MRM—Low Density Recreation

Land in the MRM—Low Density Recreation subclassification provides opportunities for dispersed and/or low-impact recreation. Emphasis is on minimal development of infrastructure that might support sightseeing, wildlife viewing, nature study, hiking, biking, horseback riding, and picnicking. Consumptive uses of wildlife (i.e., hunting, fishing) are allowed when compatible with the wildlife objectives for a given area and with Federal, State, and Tribal fish and wildlife laws and regulations.

Table 4-8. Environmentally Sensitive Areas, 111.3 Acres

Primary Use	Secondary Uses*
Manage land to protect unique and sensitive resources -Scientific -Cultural -Ecological -Aesthetic	<i>Wildlife Management</i> -Ecological restoration projects -Other similar activities <i>Low Density Recreation</i> -Nature observation -Education/Interpretation

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

Facilities may include boat ramps, boat docks, trails, parking areas, vault toilets, picnic tables, and fire rings. Manmade 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 4-9** below contains a listing of primary and secondary uses on lands classified under MRM–Low Density Recreation.

MRM–Wildlife Management

Land in the MRM–Wildlife Management subclassification is designated for stewardship of fish and wildlife resources in conjunction

with other land uses. Habitat maintenance and/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 manmade intrusions such as pumping plants, pipelines, cables, transmission lines, or for non-Corps maintenance or access roads. Exceptions to this policy are allowable where necessary to serve a demonstrated public need in those instances where no reasonable alternative is available, or other reasons deemed important by the Corps.

Wildlife management land is available for sightseeing, wildlife viewing, nature study, hiking, biking, horseback riding, and primitive camping. Consumptive uses of wildlife (hunting, fishing,

Table 4-9. MRM-Low Density Recreation, 44.7 Acres

Primary Use	Secondary Uses*
Manage land for low density, low impact recreation opportunities. -Hunting/Fishing -Hiking -Bicycling -Horseback riding -Campgrounds <15 sites -Primitive camping (designated sites) -Picnicking -Swimming -Sightseeing and nature observation -Motorized access trails and roads -Boat ramps -Non-motorized trails -Other recreation activities of a primitive nature	<i>Wildlife Management</i> -Ecological restoration projects -Other similar activities

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

Table 4-10. MRM-Wildlife Management, 1,738 Acres

Primary Use	Secondary Uses*
Manage land for stewardship of fish and wildlife resources. -General forest health -Habitat enhancement projects -Ecological restoration projects -Protection of specific habitat areas/ components (i.e., denning sites, calving sites, nests and wallows, etc.) -Other similar activities	<i>Low Density Recreation</i> -Hunting/Fishing -Hiking -Bicycling -Horseback riding -Campgrounds <15 sites -Primitive camping (designated sites) -Picnicking -Swimming -Sightseeing and nature observation -Motorized access trails and roads -Boat ramps -Non-motorized trails -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

and trapping) are allowed when compatible with the wildlife objectives for a given area, as well as with Federal, State, and Tribal fish and wildlife laws and regulations. **Table 4-10** contains a listing of primary and secondary uses on lands classified under MRM–Wildlife Management.

MRM–Vegetation Management

Activities in areas under the MRM–Vegetation Management subclassification focus on the protection and development of vegetative cover and habitat types, such as prairie and other native vegetation. All Project land is managed to protect and develop vegetative cover in conjunction with other land uses within the MRM Lands land classification. Licenses, permits, and easements are normally not allowed for manmade intrusions such as pumping plants, pipelines, cables, transmission lines, or for non-Corps maintenance or access roads. The primary emphasis in managing these lands is invasive

species control and boundary monitoring. Vegetative management land is available for sightseeing, wildlife viewing, nature study, and hiking. Consumptive uses of wildlife (hunting, fishing, and trapping) are also allowed when compatible with the wildlife objectives for a given area, as well as with Federal, tribal, and/or state fish and wildlife laws and regulations.

MRM–Future or Inactive Recreation Areas

The Future or Inactive Recreation Areas subclassification consists of lands for which recreation areas are planned for the future or lands that contain existing recreation areas that have been temporarily closed. **Table 4-11** contains a listing of primary and secondary uses on lands classified under MRM–Future or Inactive Recreation Areas.

Table 4-11. MRM-Future Recreation Areas, 27 Acres

Primary Use	Secondary Uses*
Manage land that will not limit the ability to develop or maintain an area as a recreation area.	<p><i>Wildlife Management</i></p> <ul style="list-style-type: none"> -General forest health -Ecological restoration projects -Other similar activities <p><i>Low Density Recreation</i></p> <ul style="list-style-type: none"> -Hunting/Fishing -Hiking -Bicycling -Horseback riding -Campgrounds <15 sites -Primitive camping (designated sites) -Picnicking -Swimming -Sightseeing and nature observation -Motorized access trails and roads -Boat ramps -Non-motorized trails -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

4.2.2.6 Water Surface

The Project manages 8,447.6 acres of surface water. The water surface acreage at the Project is divided into the following zones to support public safety and security:

- *Restricted* – Water areas restricted for project operations, safety, and security purposes
- *Designated No-Wake* – To protect environmentally sensitive shoreline areas,

recreational water access areas from disturbance, and/or public safety

- *Fish and Wildlife Sanctuary* – Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning
- *Open Recreation* – Those waters available for year-round or seasonal water-based recreational use

4.2.2.7 Outgrants

The purpose of an outgrant is to allow other agencies or individuals use of Project lands. These outgrants are issued by easement, permit, license, or lease. They are issued if the land is available, and if the proposed use is consistent with operational needs and resource management objectives. Other outgrants may be issued and existing ones terminated or amended, as circumstances warrant. There are currently 154 outgrants on Project lands. There are also pre-existing less-than-fee interests that the Corps must recognize, referenced as “reservations.” These are typically not included in Real Estate databases as they were not granted by the Corps. The Real Estate Division of the Corps, Walla Walla District, maintains all current information on outgrants and reservations.

4.2.2.8 Corps-Held Easements

Corps-held easements are lands for which the Corps holds an easement interest, but not the fee title. The Corps has the right to enter the property in connection with the operation of the Project. In most cases, the Corps has the right to occasionally flood these properties. Planned use and management is in strict accordance with the terms and conditions of the easement estate acquired for the Project. The Corps has acquired easements on approximately 1,190 acres of land throughout the project area.

Operations Easement

Operations easements were purchased by the Corps for the purpose of Project operations. There were 14 acres acquired for activities to include levee construction, roads, utilities, and drainage ditches.

Flowage Easement

These are easements purchased by the Corps of Engineers or reserved as part of Corps of Engineers disposal of fee lands, giving the right to flood private land during flood risk management operations. There are 1,176 acres of flowage easement land located near the Project. These easements are most commonly found near the river shores.

4.3 LAND CLASSIFICATION SUMMARY

The following table summarizes the land classification changes from the 2017 acreage to the acreage for the 2018 Master Plan, and **Appendix D** provides the new land classification maps for the 2018 Master Plan. A full list of land classification changes for each management area within the Project and the reasons for those changes is provided in **Appendix E**.

Table 4-12. Land Classification Changes from 2017 to 2018

Acreage 2017		Acreage 2018	
Land Classification Nomenclature	Acres*	Land Classification Nomenclature	Acres*
Project Operations	542.0	Project Operations	366.2
MRM-Low Density Recreation	200.0	MRM-Low Density Recreation	44.7
High Density Recreation	842.3	High Density Recreation	804.5
MRM-Wildlife Management	757.5	MRM-Wildlife Management	1738.0
MRM-Vegetation Management	972.6	MRM-Vegetation Management	0
MRM-Future or Inactive Recreation Areas	32.2	MRM-Future or Inactive Recreation Areas	27.0
Mitigation	5,162.6	Mitigation	5,545.0
Environmentally Sensitive Areas	117.0	Environmentally Sensitive Areas	111.3
Total Acres	8,626.2		8,636.7

*The 10-acre increase from 2017 to the 2018 Master Plan includes sedimentation deposition along shorelines that changed a previous Water Surface-Open Recreation designation to two different land classifications: 7.1 acres went to Environmentally Sensitive Area at Asotin Creek and 2.9 acres to High Density Recreation at Swallows Beach.



SECTION 5. RESOURCE PLAN

Building on Section 4, which provided more general land classification descriptions and acreage for each of the classifications at Lower Granite Lock and Dam, Section 5 provides information on how the management areas (such as recreation areas, HMUs, etc.) within each of the land classifications will be managed. The management areas identified are presented in broad terms. A more descriptive plan for managing these lands will be refined in the Lower Granite Operational Management Plan (OMP). Management tasks described in the OMP must support the Resource Objectives, land classifications, and resource plan set forth in this Master Plan. Numbers of acres listed under land classification categories were summarized using the Corps GIS database and may be off by several tenths of an acre at each site.

5.1 PROJECT OPERATIONS

Project Operations lands are managed to support the operation and maintenance of the dam and reservoir, associated structures, administrative offices, maintenance compounds, and other areas that are classified as Project Operations. There are a total of 366.3 acres designated under the Project Operations land classification. This is a reduction in acreage from 542 to 366.3 acres in the 2018 Master Plan. The management areas in this land classification are shown in **Table 5-1**.

The following changes were made to the Project Operations land classification: 166 acres moved into MRM–Wildlife management, 3.9 acres moved into MRM–Low Density Recreation, 2.9 acres moved into High Density Recreation, and 11.6 acres moved into MRM–Future Development. Detailed tables showing land classification changes by management area are provided in **Appendix E**.

Asotin Creek Levee. This small parcel encompasses the Asotin Levee on the north and south bank of Asotin Creek between 1st Street and 2nd Street on the north end of Asotin, Washington. The City of Asotin is listed as the sponsor of the levee, and an easement was granted for channel rehabilitation.

Asotin Sewage Treatment and Clarkston Sewage Treatment Plants. The filling of Lower Granite Reservoir required the relocation of two sewage treatment plants, one in Asotin and one in Clarkston, Washington. Both facilities were relocated on Project lands, and perpetual easements were granted to the Cities of Asotin and Clarkston, respectively. The easements reserved rights to the Government as necessary for the operation and maintenance of Lower Granite Lock and Dam.

Table 5-1. Project Operations Lands

Management Area	Total Acres
Asotin Creek Levee	1.8
Asotin Sewage Treatment Plant (levee)	1.6
Bishop Quarry	44.8
Clarkston Sewage Treatment Plant	6.5
Confluence Island HMU	0.3
Fleshman Way Interchange	1.0
Lambie Grade Repeater	0.0
Lewiston Hill Repeater	0.1
Lower Granite Dam	146.3
Lower Granite Substation	14.7
Memorial Bridge Partition Dike and Lewiston Levees	103.1
Southway Substation	0.9
Tammany Quarry	7.9
Lower Granite Natural Resource Management Office	6.9
Port of Lewiston	25.0
Red Wolf Crossing Bridge Interchange Roads	5.5

Bishop and Tammany Quarries. During construction of Lower Granite Lock and Dam, the Corps purchased several tracts of land for the purpose of the mining of sand, gravel, and rock. Bishop and Tammany Quarries are still used today as sources of sand, gravel, and rock used for rip rap.

Confluence Island HMU. This small strip of land is the western most tip of the North Lewiston Levee.

Fleshman Way and Red Wolf Crossing Bridge Interchange. Due to construction of Lower Granite Lock and Dam, new bridges were needed in the Lewiston-Clarkston area. As a result, the Red Wolf Bridge, also referred to as the “Someday Bridge,” was constructed and dedicated in 1979. Southway Bridge and its Fleshman Way Interchange was opened in 1981, six years after the completion of Lower Granite Lock Dam. Perpetual easements were granted to Washington Department of Transportation for the bridge rights-of-way.

Lambie Grade and Lewiston Hill Repeaters. Very small parcels of land located on hilltops away from contiguous Project lands along the reservoir serve as locations for communication towers to support the Project’s operations and maintenance functions.

Lewiston Levees and Memorial Bridge Partition Dike. The Lewiston Levees were constructed as an appurtenance to Lower Granite Lock and Dam and functions to keep Lower Granite Lake from flooding the City of Lewiston. The nearly 8-mile levee system is comprised of the west, east, and north sections. Seepage, pond, and storm water behind the levee is pumped into the Clearwater River via 12 pumps located in 4 strategically placed pump houses. Additionally, two drainage structures, the Lindsay Creek (370 area) and 380 Area, can move run-off water via concrete tunnels through the levee to the Clearwater River. Operations and maintenance of the levee is performed by Project staff stationed at the Lower Granite Natural

Resource Management Office in Clarkston, Washington.

Lower Granite Dam. This area is the operations and maintenance area around Lower Granite Lock and Dam. Assets in this area consist of the powerhouse, spillway, navigation lock, earthen embankment section, fish passage facilities, Juvenile Fish Facility, adult fish trap, South Shore Visitor Center, esplanade, and north shore storage yard. Allowing day-use recreation activity has been an accepted practice on the esplanade, the South Shore Visitor Center, and on the south shore upstream of the dam since completion of the Project, but this should not interfere with operating and maintaining the dam.

The Lower Granite Visitor Center offers movies, interactive displays, brochures, guided tours, and friendly and helpful staff. Small group and family tours of the powerhouse and Juvenile Fish Facility may be available upon request throughout the summer season. The Visitor Center also features a fish-viewing room that allows an up-close look at the many species of fish in the lower Snake River. Larger tours can be scheduled for school classes or special interest groups.

The Visitor Center also offers a Discover Your Northwest bookstore, which provides interpretive and educational services to the visiting public. The bookstore was established under license and is operated under a cooperative agreement.

Lower Granite Natural Resource Management Office. This area is located at 100 Fair Street in Clarkston, Washington. It serves as the administrative office, maintenance office, and equipment storage facility for Lower Granite Natural Resource Management (NRM) Section. The NRM Section is responsible for the operation and maintenance of all of the Lower Granite Project lands (i.e., recreation, mitigation, MRM

lands), as well as the Lewiston Levee system. Facilities include an office building, a shop with storage area, a boat house, and a maintenance yard.

Lower Granite Substation. The Bonneville Power Administration substation is located a quarter mile upstream of Lower Granite Dam on the south shore. It was permitted on an indefinite basis.

Port of Lewiston. The Port of Lewiston facilities lie behind the North Lewiston Levee as the Corps could not convey Project lands to the Port under the provision of Section 108 of PL 86 645. Through appropriate permits and other necessary easements, the Port and its tenants or assigns are allowed to operate freely over the levee in order to carry out and perform all reasonable activities associated with or necessary for the utilization of navigation features of the Project. The Corps still reserves controls, privileges, and safeguards necessary for Project operations and maintenance activities.

Southway Substation. This Avista Utilities (formerly Washington Water Power Company) substation is located on the east bank of the Snake River just upstream of Southway Bridge. Its placement on Corps lands was granted by the Corps through a 50-year easement.

5.2 HIGH DENSITY RECREATION

There are 804.5 acres managed under the High Density Recreation land classification. There are also several areas classified as High Density Recreation that are leased to other organizations for operation and management (**Table 5-2**). The Corps does not provide any maintenance within any of these leased locations, but there are times when the Corps provides support to the managing agency by reviewing requests for modifications to ensure they meet applicable laws and regulation for proposed activities. The goal is to work with Corps partners to

ensure recreation areas are being managed in accordance with resource objectives identified in Chapter 3, Resource Objectives. The acreage for the High Density Recreation land classification was reduced from 842.3 to 804.5 in the 2018 Master Plan. The management areas in this land classification are shown in **Table 5-2**.

The following changes were made to the High Density Recreation land classification: there were 8 changes where land moved from High Density Recreation into other classifications (total of 181.9 acres), and 13 changes where land moved from other classifications into High Density

Table 5-2. High Density Recreation Areas and Area Managing Agencies

Management Area	Total Acres	Management Agency
Asotin Baseball Fields	12.3	City of Asotin
Asotin Boat Ramp	30.5	Corps
Asotin City Park	1.0	City of Asotin
Blyton Landing	8.4	Corps
Chestnut Beach	47.8	Corps
Chief Looking Glass Park	17.7	City of Asotin
Chief Timothy Park	148.1	California Land Management Services Corporation doing business as Northwest Land Management
Clearwater Park	15.6	City of Lewiston
Gateway Park	1.2	City of Clarkston
Granite Lake Park (including Gateway Golf Center)	20.6	Port of Clarkston
Granite Lake RV Park	6.4	Port of Clarkston
Greenbelt Ramp	21.5	Corps
Hells Canyon Marina	3.68	Port of Clarkston
Hells Gate State Park	237.2	Idaho Department of Parks and Recreation (IDPR)
Lewiston Levee Parkway	43.6	Corps
Nisqually John Landing	18.3	Corps
Offfield Landing	6.0	Corps
Rotary Park	13.1	City of Lewiston
Southway Ramp	8.92	Nez Perce County
Steelhead Park	7.2	Nez Perce County
Swallows Park	46.1	Corps
Wawawai County Park	48.9	Whitman County
Wawawai Landing	4.3	Corps

Recreation (143.3 acres). Detailed tables showing land classification changes by management area are provided in **Appendix E**.

Asotin Ball Fields. This outgranted area is located in southeast Asotin, Washington between 1st and 3rd Streets. The area provides two baseball fields that are managed by the City of Asotin in conjunction with the Asotin School District. Use of the area is primarily during the spring and early summer during high school baseball and softball season.

Asotin Boat Ramp. Asotin Boat Ramp is a water access point located on the southeast edge of Asotin, Washington. The area provides a boat ramp, a vault toilet, and parking. The area is adjacent to two baseball fields managed by the City of Asotin in conjunction with the Asotin School District. During the spring and early summer, the boat ramp parking area is used by

those attending baseball and softball games. The heaviest visitation to the area is between July and October with primary activities of boating, fishing, swimming, and wildlife viewing.

Asotin City Park. This outgranted area is located in north Asotin, Washington, between Cleveland Street and Baumeister Drive. It is managed by the City of Asotin. The leased area only makes up about one-third of Asotin City Park, and the remaining two-thirds of the property is owned by the City of Asotin. Facilities include campsites with water and electricity, a group shelter, and a playground. Visitation is highest during the summer months when large groups reserve park facilities for special events such as weddings.

Blyton, Nisqually John, and Wawawai Landings. Blyton (**Figure 5-1**), Nisqually John, and Wawawai Landings are three separate



Figure 5-1. Campsites at Blyton Multipurpose Recreation Area

multipurpose recreation areas located on the north shore of Lower Granite Lake in Whitman County, Washington. Each of these areas provide a boat ramp, a vault toilet, camping, and picnic sites. Visitation is high from April through October. The primary activities here are camping, boating, and fishing. In the fall, the areas are also used as a staging area for hunting.

Chestnut Park (Beach). Chestnut Park is a day-use area located on the west bank of Lower Granite Lake in Clarkston, Washington. The area's main features are the natural beach (once known as Clarkston Beach) and about 1 mile of the paved Greenbelt Trail. The Greenbelt Trail is a portion of the Clearwater-Snake River National Recreation Trail. Amenities include paved parking lots, a waterborne restroom, picnic sites, benches and an ADA accessible fishing platform. Activities include swimming picnicking, fishing, and the multiple uses of the national recreation trail.

Chief Looking Glass Park. This outgranted park is located at 305 1st Street, Asotin, Washington. The park is managed by the City of Asotin. The Park is named for Chief Looking Glass, a Nez Perce war chief (1832-1877). Facilities include a waterborne restroom, parking, a recreation vehicle dump station, a football field, tennis courts, and picnicking facilities. The area also has a boat ramp, but it currently is unusable due to sediment build-up. The City is currently working with the Corps and other stakeholders to solve the problem. Once the sediment issue is resolved, it is anticipated that visitation will increase during the summer and fall to accommodate boating activity associated with fishing.

Chief Timothy Park. This outgranted park is located on the south shore at river mile 132 on the Snake River. The Park is named after the head of a Band of the Nez Perce Nation, Chief Timothy. He was a friend of the European settlers of the region and died in 1891 at the age of 91. The

majority of the park is located on an island that was created by the flooding of the valley caused by the construction of Lower Granite Lock and Dam. It originally was leased to Washington State Parks, but the lease was relinquished in the fall of 2003 due to a budget shortfall. Since 2004, the park has been managed by a concessionaire, California Land Management Services Corporation doing business as Northwest Land Management. Facilities include 77 full service campsites, a multilane boat ramp, parking, three waterborne restrooms, a beach, and a playground. The park is open from May to October and supports boating, camping picnicking, swimming, playing, and fishing.

Clearwater Park. This outgranted area is located on the north shore at river mile 2 on the Clearwater River. The park is managed by the City of Lewiston. Part of the area is the ponding area for the North Lewiston pumping plant, also known as Pump Plant B. The recreational use of the ponds is subordinate to the primary use, which is for short term storage of storm water runoff. Recreation facilities include two baseball/softball fields, a waterborne restroom, and a fenced dog park. Visitation is highest in spring and early summer. The primary activity of the area is fitness-related activity associated with the ball fields.

Gateway Park. This outgranted area is located at the corner of Riverview Boulevard and Bridge Street. It is managed by the City of Clarkston. Recreation facilities include picnic tables and benches. Many visitors purchase lunch at nearby restaurants and relax at the tables with a beautiful view of the Snake River and Interstate (Blue) Bridge.

Granite Lake Park. This outgranted area is located in northeast Clarkston along Port Way. The area is managed by the Port of Clarkston and is comprised of a day-use park and the Gateway

Golf Center driving range. Facilities include the golf driving range, a waterborne restroom, a group shelter, an amphitheater, a commercial dock, parking, and access to the Greenbelt Trail. Visitors use the site to access commercial boating tours, for special events such as weddings, to work on their golf swing, and to access the national recreation trail to conduct fitness activities.

Granite Lake RV Park. This outgranted area is located at 306 Granite Lake Drive in Clarkston, Washington. The area is managed by the Port of Clarkston. Facilities at the park include 75 full service campsites, a waterborne restroom with showers, a clubhouse, and access to the Greenbelt Trail. Activities include camping, picnicking, and the multiple uses of the national recreation trail.

Greenbelt Ramp. Greenbelt Ramp is a day-use area located on the west bank of Lower Granite Lake in Clarkston, Washington. The area provides a boat ramp, paved parking, a waterborne restroom, picnic sites, and access to the Greenbelt Trail. The heaviest visitation occurs in April–May for salmon fishing season and in September–October during the fall for steelhead fishing season. Activities include boating, fishing, picnicking, and the multiple uses of the national recreation trail.

Hells Canyon Marina. This outgranted area is located on the south shore at river mile 138 on the Snake River, in the northwest corner of Clarkston, Washington. The area is managed by the Port of Clarkston. Facilities in this area include a marina with 120 wet slips, a boat ramp, a waterborne restroom, and picnic sites. The primary activities that occur here are boating and fishing.

Hells Gate State Park. This outgranted park is located on the east shore at river mile 143 on the Snake River, just south of Lewiston,

Idaho. It is managed by Idaho State Parks and Recreation. Hells Gate State Park is the largest park area on Lower Granite Lake in terms of land area. Facilities include a 112-slip marina, a multilane boat ramp, and a campground with 91 campsites, with 63 having full-service hook-ups. Additional amenities include an interpretive facility, five waterborne restrooms, a recreation vehicle dump, an amphitheater, a playground and 30 picnic sites. Visitation is highest from May to October. Primary activities include camping, boating picnicking, swimming, and fishing.

Lewiston Levee Parkway. Lewiston Levee Parkway is a day-use area on top of and adjacent to the West Lewiston Levee in Lewiston, Idaho. The area contains 11.3 miles of the Clearwater-Snake River National Recreation Trail, the Lewis-Clark Interpretive Center, and the Clearwater Landing Interpretive Center. Amenities offered include waterborne restrooms, picnic sites, a 12-station exercise trail, and numerous benches along the paved urban trail. This area is the highest visited recreation area on Lower Granite Lake with visitors primarily involved in walking, jogging, bicycling, sightseeing, picnicking, and fishing.

Offield Landing. Offield Landing is a multipurpose recreation area located on the south shore about a quarter mile upstream of Lower Granite Lock and Dam. It is the only Lower Granite Lake recreation area located in Garfield County. The area provides a boat ramp with a courtesy dock, accompanied by a paved parking lot. Amenities include a vault toilet, camping, and picnic sites. Due to its close proximity to an electrical substation and power lines, remote control aircraft and kite flying are not allowed. The primary activities here are camping, boating, and fishing. In the fall, the area is used as a staging area for hunting. This area is the least visited of all Lower Granite Lake high density recreation areas.

Rotary Park. This outgranted park is located between Snake River Avenue in Lewiston, Idaho, and the east shore of the Snake River at river mile 141. It is adjacent to Southway Ramp. The area is managed by the City of Lewiston. Since the lease was signed in 2010, little development has taken place. The only recreation facility is a segment of the national recreation trail, and nearly all the recreation activity is associated with the trail.

Southway Ramp. This outgranted area is located between Snake River Avenue in Lewiston, Idaho, and the east shore of the Snake River at river mile 141. It is adjacent to Rotary Park. Southway Ramp is managed by Nez Perce County. The area consists of a parking lot, a two-lane boat ramp with ADA accessible courtesy dock, and a waterborne restroom. Visitor activities include boating, fishing, and the various uses of the nearby national recreation trail.

Steelhead Park (formerly Clearwater Ramp). This outgranted area is located on the north shore of the Clearwater River at river mile 3.1. It is managed by Nez Perce County. The area was originally constructed as an operations and maintenance ramp for use primarily by Government personnel and to serve the upriver-bound recreational boater. It was later determined that the operations and maintenance facility for the Corps would be located on the Washington side of the confluence. The area also had been called “North Lewiston Ramp” and “Clearwater Ramp.” Facilities include a two-lane boat ramp with two courtesy docks, parking with spaces for 29 trailers, a waterborne restroom, and a few picnic sites. Visitation tends to be high during spring salmon and fall steelhead fishing seasons. Boating and fishing are the primary activities.

Swallows Park. Swallows Park is a day-use area located between the Snake River and State Route 129 in Asotin County, Washington. The area

is home to a four-lane boat ramp and 1.4 miles of the paved Greenbelt Trail. Amenities include waterborne restrooms, a couple of large group shelters, playgrounds, a volleyball court, and several picnic sites. The Park is utilized heavily during the summer recreation season, with frequent special events taking place.

Wawawai County Park. This outgranted area is located on the north bank at river mile 111 on the Snake River. It is managed by Whitman County Parks and Recreation. The Wawawai Canyon area is important in the local history related to the river. It was once the site of a small town along the river. The Snake Fruit Growers Association had a plant at Wawawai, and steamers stopped here to pick up fruit and carry it downriver to market. Wawawai was also the site of one of the tramways used to transport wheat from the fields down to the river to be loaded onto rail cars for transport downriver. Wawawai County Park includes a campground with nine campsites and a picnic area with a group shelter. In 1995, an interpretive walking trail was added. The primary activities at the park are camping and picnicking.

5.3 MITIGATION

There are 5,545.3 acres of land designated for Mitigation within the Project area, with Nisqually John, Kelly Bar, and Hells Gate HMUs making up the largest parcels. This is an increase in acreage from 5,162.6 to 5,543.3 in the 2018 Master Plan. The management areas in this land classification are shown in **Table 5-3**.

The following changes were made to the Mitigation land classification: there was one change where land moved from Mitigation into MRM Low Density Recreation (0.8 acres), and seven changes where land moved from other classifications into Mitigation (446 acres).

Table 5-3. Mitigation Lands

Management Area	Total Acres
Asotin Slough HMU	63.0
Chief Timothy HMU	64.3
Hells Gate HMU	739.6
Kelly Bar HMU	458.6
Knoxway Canyon HMU	303.8
Lower Goose Pasture	42.3
Moses HMU	30.9
Nisqually John HMU	3,183.2
Sheep Gulch HMU (previously No Name HMU)	200.4
Transmission Line HMU	147.9
Upper Goose Pasture	73.1
Water Tank HMU (previously Wilma-North Clarkston)	96.4
Wawawai HMU	109.2
Wilma HMU	32.6

Detailed tables showing land classification changes by management area are provided in **Appendix E**.

These lands were designated as Mitigation as part of the Lower Snake River Fish and Wildlife Compensation Plan, authorized in 1976 to mitigate for lost hunting and fishing opportunities as a result of the construction of the four lower Snake River dams. Wildlife management strategies were agreed upon with the Corps, United States Fish and Wildlife Service (USFWS), Washington Department of Fish and Wildlife (WDFW), and, later on, Idaho Fish and Game (IDFG).

The Corps completes mitigation through the establishment of habitat management units (HMUs). Acquisition, establishment, and development of the HMUs has occurred since the early 1970's, with the bulk of the work being done in the 1980s and early 1990s.

Lands were developed according to an intensity level of intensive, moderate, or no

development. HMUs with intensive development included irrigation systems and plantings. A picture of Central Ferry Park downstream of Lower Granite dam illustrates the power



Figure 5-2. Central Ferry Park, 1994. Example of Intensive Land

of irrigation in this arid region (**Figure 5-2**). Moderately developed habitat management units included dryland development, water guzzlers, and fencing. The habitat management units categorized for no development have remained undeveloped, with some sites adding wildlife water guzzlers over time.

There was approval in 1972 for acquisition of the land in the vicinity of what is now known as Upper and Lower Goose Pasture HMUs (64 acres of Washington Water Power abandoned reservoir) “for wildlife mitigation” as part of the Lower Granite Lock and Dam “as a replacement for loss of fisherman access to the former free flowing portion of the Clearwater River that will be inundated by the Lower Granite Project” (USACE 1972).

Design Memorandum for Wildlife Habitat Development Supplement No. 1 (April 20, 1979) listed all of the HMU sites in Washington at that time (some of which subsequently changed, such as Wilma HMU), as well as the level of development they would receive, either intensive, moderate, or no development. In Design Memorandum No. 2A, Wildlife Compensation and Fishing Access (April 23, 1980), and Lower Snake River Fish and Wildlife Compensation Plan Design Memorandum No. 8, Idaho Fishing Site Selection identified sites for fisherman access. A 1983 Memorandum of Agreement between the Corps, IDFG, and Idaho Department of Parks and Recreation established Hells Gate HMU.

Design Memorandum for Wildlife Habitat Development Supplement No. 2, Hells Gate Habitat Management Unit (October 1987), supplemented supplement No. 1 (1979) and described “habitat management practices intended to improve the quality of vegetative communities beneficial to wildlife residing on Hells Gate lands.”

The Lower Snake River Fish and Wildlife Compensation Plan mitigation strategy was originally based on “substantial comprehensive development of project and non-project lands” and the “maintenance of habitat and production of game animals which will sustain the hunting pressure, appreciative use which would have occurred if the Project had not been constructed, and the maintenance of nongame animals at pre-project levels” (Corps 1975).

This strategy was implemented without specific and measurable objectives, so, in 1989, a letter of agreement between the Corps, USFWS, and WDFW modified the strategy to develop habitat based compensation objectives. These objectives were established using an agreed upon Habitat Evaluation Procedures (HEP) analysis for identifying pre-Project conditions, and for then measuring progress toward the habitat objectives. The HEP analysis used several “indicator” species’ biological requirements and cover types as indicators of the habitat quality to obtain habitat units (HUs), which were then compared to the objectives to measure success.

Asotin Slough HMU. Asotin Slough HMU (**Figures 5-3 and 5-4**) is located on the south end of Asotin, Washington. It can be categorized as a moderately managed site. A moderately managed site is when a few habitat components such as a pasture, meadow, and dry-land cisterns are developed. At Asotin Slough, an old river chute was restored in 2009 to improve riparian habitat. The restored chute was hydro-seeded, and cobbles were placed in an adjacent mulberry grove to provide protection from erosion. In 2010, shrubs and trees were planted on the low benches along the river chute. A cooperative agreement has also been signed with a local birding group to improve bird habitat. The local group erects bird boxes to increase passerine nesting opportunity. Due to the proximity of Asotin Slough HMU to city limits, no hunting is



Figure 5-3. Asotin Slough in Fall



Figure 5-4. Asotin Slough Example of Fish Habitat

permitted. Bird watching is a popular activity at this site, as is visiting the beach during the summer months. Because of the hunting restrictions, and the interest from birders, this site is often called the “bird sanctuary” by local residents.

Chief Timothy HMU. Chief Timothy HMU is located approximately 4.5 miles west of Clarkston, Washington, and is accessible from U.S. Highway 12. It can be categorized as an intensively managed site. Design Memorandum for Wildlife Habitat Development Supplement No. 1 (April 20, 1979) described intensive managed sites as those with “maximal development” that incorporated the habitat components of “trees and shrubs, meadows, pastures, fence associations, fields, annual food plots, water guzzler complexes, and nest structures.” This development includes irrigation. These sites selected for intensive management were chosen for mitigation because they were large in size, had potential for farming both grasses and legumes, a network of trees and shrubs; and had sufficient land immediately adjacent to a water source to pasture Canada geese. Due to its proximity to the field office, Chief Timothy HMU has probably received more hands-on management and field investigation than any other HMU on the Project. In 2002, the irrigation pumping system was re-located to the upstream end of the unit because the old irrigation intake was silted in. Currently, the irrigation system adequately provides water for shrub and tree plots, wildlife food plots, meadow, and mixed pasture. Due to the unit’s proximity to US Highway 12, rifle and pistol hunting are not permitted. Archery and shotgun hunting, however, is still allowed.

Hells Gate HMU. Hells Gate HMU is located approximately 4 miles south of Lewiston, Idaho, on the east bank. Like Chief Timothy HMU, it is categorized as an intensively managed site. Hells Gate originally was purchased as a part of Hells

Gate State Park and classified as recreation lands. In 1983, A Memorandum of Agreement (MOA) was prepared by the Corps and signed by the Idaho Parks and Recreation Department (IDPR) and IDFG. In the MOA, IDFG agreed that additional mitigation would not be requested if Hells Gate was developed for mitigation as recommended by the Dr. W. L. Pengally report in 1978. Approximately 650 acres of Hells Gate recreation lands were then reclassified to wildlife management/mitigation August 20, 1984. Management of the area is covered by Lower Snake River Project, Design Memorandum 44, Supplement No. 2, Wildlife Habitat Development, Hells Gate Habitat Management Unit, dated October 1987. A low pressure irrigation system was installed in 1994 to pump lower Snake River irrigation water over 200 feet in elevation to irrigate three shrub/tree plots. The system was replaced with a well drilled to a depth of 225 feet in 2009. The new well is used jointly by IDPR for Hells Gate State Park and the Corps for the HMU. User group conflicts between hunters, mountain bikers, and horseback riding enthusiasts have been a problem at times. Natural Resource Management staff continue to work with local user groups and the Hells Gate Trails Group to resolve issues. Hunting at the site is restricted to archery and shotgun only because of the heavy use, and the fact that the City of Asotin is directly across the river from the HMU.

Kelly Bar HMU. Kelly Bar HMU can be categorized as an area with no or very limited habitat development, with the exception of fencing and water guzzlers. It is located on the south bank at river mile 119.5 to 121.2 on the Snake River. The unit is comprised of about 190 acres of land that were originally purchased during the land acquisition phase for Lower Granite Lock and Dam, and a 268-acre parcel that was purchased as part of the Lower Snake River Fish and Wildlife Compensation Plan

development activities. Fencing was constructed in 1996, and three water guzzlers (dryland cisterns) were later added. This unit is only accessible by boat. Activity at Kelly Bar HMU includes turkey, upland game bird, and deer hunting.

Knoxway Canyon HMU. Knoxway Canyon HMU is located on the south shore at river mile 115 to 116 on the Snake River. The site was originally purchased and classified for Recreation-Low Density Use. Plans outlined in Design Memorandum 28 indicated that the area was planned as a boat-in recreation area with a courtesy dock, vault-style toilet, picnic shelters, and trails. Public support and funding never materialized, and the area was used primarily for mitigation purposes. HMU development has been limited to fence construction and maintenance, but the HMU's draw has a fair amount of trees and riparian habitat. The area is only accessible by boat. Smallmouth bass anglers use the embayment in spring and early summer. Upland game bird and deer hunters use the area during the first week of their respective seasons in the fall.

Lower Goose Pasture HMU and Upper Goose Pasture HMU. Lower Goose Pasture and Upper Goose Pasture are two distinct units located on the Lower Clearwater River. These are in the area of the former Washington Water Power (Lewiston) Dam, and are part of the 64 acres authorized for purchase for mitigation in 1972. They are two of the three parcels developed by the Corps to mitigate for lost wildlife habitat in Idaho under the LSRFWCP after the 1983 MOA was signed with IDFG. Both have been categorized as intensely managed sites and have some form of irrigation to support wildlife food plots and shrub/tree plots. Originally, the intent of the sites was for goose brooding for young geese produced on Hog Island. As a result of over abundant goose populations currently in

the Lewis-Clark Valley, the Corps and IDFG have agreed that future management in these HMUs should focus less on goose productivity and more on the promotion of native and riparian vegetation to benefit a wider variety of wildlife species. Because the areas remain a part of the Lewiston Wildlife Preserve, a preserve established by Idaho Statute 36-1908, no hunting is authorized.

Moses Bar HMU. Moses Bar HMU is located on the north shore of Lower Granite Lake. With the exception of the installation of a heron rookery in 2004, minimal habitat development has occurred here. Upland game bird hunting and fishing are the primary activities that occur at Moses Bar.

Nisqually John HMU. Nisqually John HMU is located on the north bank of Lower Granite Lake. It is the largest HMU on Project lands. The area was purchased in two separate transactions as a part of the LSRFWCP. Approximately 2,100 acres was acquired in 1992, and another 977 acres was purchased in 1993 under willing seller agreements. The area is a moderately managed site. Development includes six water guzzlers, quail roosts, and six miles of fencing. The unit is heavily used by upland game bird and deer hunters.

Sheep Gulch, Water Tank, and Wawawai HMUs. Sheep Gulch, Water Tank, and Wawawai HMUs are examples of units with no development, except fencing. This management strategy was intentional in the development of LSRFWCP HMU sites. The emphasis at these sites is invasive species control and fence maintenance. Sheep Gulch HMU can only be accessed by boat. The primary visitor activity at these units is upland game bird hunting.

Transmission Line and Wilma HMUs. Transmission Line and Wilma HMUs can be categorized as areas with no or limited habitat

development. Both areas have a water guzzler and fencing. Transmission Line HMU is used by upland game bird hunters, and Wilma HMU is used for bow fishing, as well as shoreline fishing.

5.4 ENVIRONMENTALLY SENSITIVE AREAS

Environmentally Sensitive Areas are managed to protect the scientific, ecological, cultural, or aesthetic features, of the lands. Typically, limited or no development for public use is allowed. Manmade intrusions (power lines, non-project roads, and water and sewer pipelines) are not permitted on lands classified as Environmentally Sensitive Areas. Activities designed to promote and improve special features identified in the area are allowed, along with education and interpretation. There are a total of 111.3 acres designated under the Environmentally Sensitive Area land classification. This is a decrease in acreage from 117 to 111.3 in the 2018 Master Plan. The management areas in this land classification are shown in **Table 5-4**.

The following changes were made to the Environmentally Sensitive Areas land classification: there were two changes where land moved from Environmentally Sensitive Areas into MRM–Low Density Recreation and MRM–Wildlife (9.6 acres), and three changes where land moved from other land classifications into Environmentally Sensitive Areas (62.7 acres). Detailed tables showing land classification changes by management area are provided in **Appendix E**.

Alpowa, Asotin Creek, and Knoxway Canyon (Knoxway Bay) HMUs. These Environmentally Sensitive Areas were designated due to their proximity to Endangered Species Act-listed-fish bearing streams and wetlands. These areas serve to compensate for the loss of 1.4 acres of wetland that will be disturbed as part of the Swallows

Beach Restoration Project (Section 6.5 provides additional information about this project). Any changes in land classification or development to these areas must be reported to the Washington Department of Ecology as a part of the Swallows Beach Restoration Project Wetland/Riparian Mitigation Plan agreement.

Knoxway Canyon HMU (Granite Point). This Environmentally Sensitive Area was designated for scenic beauty, geological interest, and historical value. It is located on the south shore of the Snake River (**Figure 5-5**). The granite rock outcropping was exposed as a result of the erosion of several hundred feet of basalt. In 1881, the steamboat Spokane hauled rocks from the Granite Point quarry downstream for the bridge abutments at Pasco and Riparia. In 1898/1899, stone was transported downstream by the ship Norma to Portland to build the Custom House in Portland (Critchfield 1973). The railroad had planned a tunnel through Granite Point in the early 1900s, but later blasted through it instead (Critchfield 1973). This site has been a popular site for picnics since early development, particularly since roads have been in place (Critchfield 1973).

Confluence Island HMU. This Environmentally Sensitive Area was designated due to its historical value. Located in this area is the boundary marker between Idaho and Washington Territories. The Lower Granite Final Environmental Impact Statement, dated May 1975, indicated that this marker “shall be retained and protected.” In addition to its historical value, Confluence Island is also home to a healthy big sage community. These habitat types are becoming increasingly rare due to the pervasive cheat grass fire succession problem and are of high wildlife value.

Table 5-4. Environmentally Sensitive Areas

Management Area	Total Acres
Confluence Island HMU	0.7
Alpowa HMU	36.4
Asotin Creek HMU	7.1
Knoxway Canyon HMU (Granite Point) south shore	48.6
Knoxway Canyon HMU (Knoxway Bay) north shore	18.5



Figure 5-5. Granite Point Washington

5.5 MULTIPLE RESOURCE MANAGEMENT

This MRM Lands classification allows for designation of a predominant use with the understanding that other compatible uses may also occur in the classification, to include Low Density Recreation, Wildlife Management, and Future or Inactive Recreation Areas. Total

MRM Lands for the Project is approximately 1,809.7 acres. This is a reduction in acreage from 1962.3 to 1809.7 in the 2018 Master Plan. The management areas in this land classification are shown in **Table 5-1**, organized by subclassification.

Table 5-5. MRM Lands and Acres by Land Use Subclassification

Management Area	Total Acres
MRM-Low Density Recreation	
Asotin Boat Ramp	8.1
Evans Pond Parking Lot	1.2
Golf Course Pond Parking Lot	0.7
Wawawai Landing (Granite Point)	22.5
Hells Canyon Marina South Shoreline	0.5
Lower Granite North Shore Tailrace	6.7
Nisqually John HMU Parking Lot	0.8
Wawawai Landing (Wawawai Wayside) River Mile 114.5	2.1
Blyton Landing (Blyton Wayside) River Mile 120.5	1.3
Tammany Creek Parking Lot	0.8
MRM-Wildlife Management	
Alpowa HMU	131.1
Asotin Creek HMU (left bank below bridge)	2.4
Centennial Island HMU	3.5
Confluence Island HMU and West Pond Overflow Basin	10.6
Critchfield Quarry HMU	33.5
Evans Pond HMU	105.8
Golf Course Pond HMU	13.6
Granite Pond HMU	192.4
Moses HMU	181.6
Nisqually John HMU (shoreline extensions)	239.6
Sheep Gulch (middle segment)	163.0
Silcott HMU	112.8
Steptoe Canyon HMU	171.7
Tammany Quarry HMU	12.7
Transmission Line HMU (Kluge Canyon and Offield Highlands)	132.1
Water Tank HMU (State Line)	28.8
Wawawai HMU (Buck Canyon and Crum)	126.5
Wilma HMU	76.3
MRM-Future or Inactive Recreation Area	
Boyer Park Expansion	27.0

The following changes were made to the MRM Lands land classification: there were 39 land changes where land moved from MRM Lands into other classifications (1056.4 acres), and 31 changes where land moved from other classifications into MRM lands (782.5 acres). Detailed tables showing land classification changes by management area are provided in **Appendix E**.

5.5.1 MRM–Low Density Recreation

MRM–Low Density Recreation are lands with minimal development or infrastructure that support passive public recreation use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing, etc.). There are a total of 10 sites under this classification encompassing approximately 44.7 acres.

Asotin Boat Ramp. This Low Density Recreation site is associated with the Asotin Boat Ramp recreation area. It is located on the upstream end of the unit. This parcel serves as a transition from high density recreation activities of the boat ramp and the mitigation activities at the HMU. The parcel is primarily used for bird watching and hiking.

Evans Pond and Golf Course Pond Parking Lots. These Low Density Recreation sites serve as recreation land access points. They provide the parking area, vault toilet, and kiosk for anglers at Evans and Golf Course Ponds.

Granite Point and Downstream Pullout and Pullout at River Mile 114.5. These Low Density Recreation sites are associated with Wawawai Landing recreation area. They are located upstream of the main parking area and boat ramp. Facilities located here include small shelters, picnic tables, fire rings, and a parking area to support Granite Point. The primary activities here are primitive camping and fishing, but during the summer months, visitors flock to

Granite Point to sunbathe and rock climb.

Hells Canyon Marina South Shoreline. This Low Density Recreation site is associated with Hells Canyon Marina. The small strip of land is adjacent and downstream from the marina. It is used primarily by anglers.

Lower Granite North Shore Tailrace. This Low Density Recreation area is located below Lower Granite Lock and Dam. Facilities here include a vault toilet and two small shelters. Activities at this area are primitive camping, picnicking, and fishing.

Nisqually John HMU Parking Lot. This Low Density Recreation site serves as a recreation land access point. It provides a parking lot, kiosk, and trail head for Nisqually John HMU. Activities supported here are hiking and hunting. The parcel also serves as a primitive camping overflow during deer hunting season.

Pullout at River Mile 120.5. This Low Density Recreation site is associated with Blyton Landing recreation area. It is located upstream of the main parking lot and boat ramp. Facilities here include picnic tables, fire rings, as well as parking. The primary activity here is picnicking and fishing.

Tammany Creek Parking Lot. This Low Density Recreation site serves as a recreation land access point. It provides a parking lot, vault toilet, kiosk, and trail head for Hells Gate HMU. Activities supported here are hiking and hunting.

5.5.2 MRM–Wildlife Management

MRM–Wildlife Management lands are designated for stewardship of fish and wildlife resources in conjunction with other land uses. Habitat maintenance and/or improvements are for a designated species, or group of species. This land classification includes 972 acres that were previously classified under MRM–Vegetation

Management. There are a total of 18 sites under this classification encompassing approximately 1,738 acres.

Alpowa HMU. Alpowa HMU is located on the south shore near river mile 130.5 on the Snake River. This area consists of a strip of land along Lower Granite Lake and another that is south of the lands at the mouth of Alpowa Creek and U.S. Highway 12 classified as Environmentally Sensitive Areas. Management emphasis of this area focuses on invasive species control and protection of Washington State-listed plant species that occur in the southern portion. Some waterfowl and game bird hunting occur at this location.

Asotin Creek HMU. Asotin Creek HMU is located on the north bank of Asotin Creek in Asotin, Washington. Management emphasis of this area is invasive species control.

Centennial Island HMU. Centennial Island HMU is located at river mile 119.8 on the Snake River. It was created by in-water disposal of dredge spoils in the winter of 1988-89, with the intent to try to create some shallow water and resting habitat for anadromous fish species. The island serves as a nesting area for waterfowl and has long been home to an active beaver lodge. As the island is in the vicinity of Blyton Landing, it attracts many boaters during the summer months. Leave No Trace camping is permitted on the upstream end of the island outside of the waterfowl nesting season.

Confluence Island HMU. Confluence Island HMU is located near the north bank at the confluence of the Snake and Clearwater Rivers. It was built with dredge spoils. The east end is in Idaho, and the west end is in Washington. The island is primarily used by shoreline anglers and waterfowl hunters.



Figure 5-6. Hunting in the HMUs

Critchfield Quarry HMU. Critchfield HMU is located between the cities of Asotin and Clarkston, Washington, and can be accessed via Critchfield Road. The site originally was purchased for gravel and rock, but was never developed because enough supply was provided from elsewhere. The area is currently being used as a nursery and test site for growing native plants. Management emphasis of this area is invasive species control. Critchfield is also home to a large population of sagebrush mariposa-lily (*Calochortus macrocarpus* var. *maculosus*), a state-listed species.

Evans Pond HMU and Golf Course Pond HMU. These areas are located west of Clarkston, Washington. Ponds at both locations are stocked with rainbow trout (*Oncorhynchus mykiss*) by WDFW every spring and are fished heavily by

the visiting public. Trash can be problematic at these sites, although local groups have often volunteered to help clean up the HMUs.

Granite Point HMU. Granite Point HMU is located on the north bank from river mile 113.3 to 117.7 on the Snake River. The boundary of this area is not well marked, and this area is subject to agricultural related trespass and encroachment. Lack of fencing contributes to the conflict that occurs between hunters and neighboring land owners. Upland game and deer hunting are authorized in the area. Deer hunting typically takes place in the draws using black powder and modern firearms.

Moses HMU. This area is the upland portion of Moses HMU. It was originally classified as an Off-Road Vehicle (ORV) area but was never developed. Management emphasis of the area is invasive species control. Whereas, shoreline fishing is the primary activity in the lowland (Mitigation) portion of Moses, upland gamebird

hunting is the preferred activity in the upland (Wildlife Management) portion of Moses.

Nisqually John HMU. This portion of Nisqually John includes the “tails” along the north bank upstream and downstream of the large portion of Nisqually John classified under Mitigation. These land were purchased during the land acquisition phase prior to construction of the dam. Management emphasis of this area is invasive species control. Due to the narrowness of this strip of land and the bisecting county road and railroad, visitor activity here is limited to fishing and some upland game bird hunting.

Sheep Gulch HMU. This area is the middle segment of the Sheep Gulch HMU. Whereas the upstream and downstream segments are classified Mitigation, this segment is classified as MRM–Wildlife Management because the area was less suitable for habitat development. Management emphasis of the area is invasive species control.



Figure 5-7. Hunting in the HMUs

Silcott HMU. This area is located on the south bank near river mile 132 on the Snake River. It is separated from the river corridor by U.S. Highway 12 and Chief Timothy HMU. The unit has minimal wildlife management potential, is on a fairly steep hillside, and contains a rock quarry. There is also a wildlife water guzzler located in the upland section. Private lands that adjoin the area are currently being subdivided and developed as home sites. Some upland game bird hunting occurs in the area, but opportunity may be limited due to homeowner safety concerns.

Steptoe Canyon HMU. This area is located on the north bank near river mile 126.1 to 128.4 on the Snake River. Management emphasis of this area is invasive species control. Bow fishing and shoreline fishing are common activities that occur in the embayment at the mouth of the canyon.

Tammany Quarry HMU. This area is located in south of Lewiston, Idaho, in Nez Perce County. Tammany Quarry is intersected by Tammany Creek and Tammany Creek Road that parallel each other dividing the quarry (classified as Project Operations) to the southeast and the undeveloped quarry (classified as MRM–Wildlife Management) to the northwest. Management emphasis of this area is invasive species control.

Transmission Line HMU. This area makes up the upstream and downstream segments of Transmission Line HMU. Whereas, the middle segment is classified as Mitigation, these segments are classified as MRM–Wildlife Management because the areas are less suitable for habitat development. Management emphasis of the area is invasive species control.

Water Tank HMU. This area is a narrow strip of land located north of State Route 193 between Red Wolf Bridge and the Washington-Idaho state line. Management emphasis of the area is invasive species control.

Wawawai HMU. This area makes up the upstream and downstream segments of Wawawai HMU. Whereas, the middle segment is classified Mitigation, these segments are classified MRM–Wildlife Management because the areas are less suitable for habitat development. Management emphasis of the area is invasive species control.

Wilma HMU. This area is located on the north bank at river mile 132.9 on the Snake River. It is located on the downstream end and is about twice as large as the portion of this HMU classified Management emphasis is invasive species control. Some upland game bird hunting occurs in this area.

5.5.3 MRM–Vegetative Management

The Corps did not designate any Project land as MRM–Vegetation Management in isolation because its uses and goals are similar to those of the MRM–Wildlife Management subclassification. Under the new nomenclature, lands previously classified as MRM–Vegetation Management (972.6 acres) were moved to MRM–Wildlife Management. MRM–Vegetation Management remains an important aspect of managing for wildlife.

5.5.4 MRM–Future or Inactive Recreation Areas

Boyer Park expansion is the only area under the Future or Inactive Recreation Areas classification, and it encompasses approximately 27 acres. This area was identified as compatible for future recreational development. Until there is an opportunity to further develop this area, this land will be managed under the MRM–Future or Inactive Recreation Areas classification.

5.6 WATER SURFACE ZONING

Water surface zoning at Lower Granite Lock and Dam is utilized to support public safety and security. The water surface on Lower Granite Lake includes the following zones: Restricted, Designated No-Wake, and Open Recreation. Open recreation allows for recreation activities such as wading, swimming, paddling, sailing, motorboating, and fishing. There are 8,372 acres of water surface designated for open recreation. Water Surface acreage was reduced from 8,382 to 8,372 in the 2018 Master Plan.

The following changes were made to the Water Surface land classification due to sediment deposition creating more land along the shoreline: 7.1 acres moved from Water Surface–Open Recreation to Environmentally Sensitive Areas at Asotin Creek, and 2.9 acres moved from Water Surface–Open Recreation to High Density Recreation at Swallows Beach. Detailed tables showing land classification changes by management area are provided in **Appendix E**.

At Lower Granite Lock and Dam, boat restricted zones (BRZ) have been set up below and above the dam to allow for Project operations, safety, and security. The waters are restricted to all vessels, except government vessels. The BRZ is described as “all waters commencing at the upstream of the navigation lock guidewall then running in the direction of 131° 31’ true for a distance of 608 yards; thence 210° 46’ true to the south shore, a distance of 259 yards. The downstream limits commence at the downstream end of navigation lock guidewall; thence to the south shore, at right angles and parallel to the axis of the dam. Signs designate the restricted areas” (Coast Pilot 7, 2013 45th Edition).

Zones near boat ramps are Designated No-Wake to protect recreational water access from disturbance and for public safety. The largest designated no-wake zone is in the vicinity of Chief Timothy Park.



SECTION 6. SPECIAL TOPICS, ISSUES, AND CONSIDERATIONS

This section discusses the special topics, issues, and considerations identified as important to the future management of Lower Granite Lock and Dam. Special topics, issues, and considerations are defined in this context as any problems, concerns, and/or needs that could affect or are affecting the stewardship and management potential of the lands and waters under the jurisdiction of the Walla Walla District, Lower Granite Lock and Dam.

6.1 LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN

The Lower Snake River Fish and Wildlife Compensation Plan (LSRFWCP) was a negotiated mitigation settlement developed and implemented to provide compensation for hunting and fishing opportunity losses resulting from the construction and operation of the four lower Snake River dams (Ice Harbor, Lower Monumental, Little Goose, and Lower Granite), which impounded approximately 140 miles on the lower Snake River in Washington and Idaho. The LSRFWCP, published in June 1975, was authorized by the Water Resources Development Act of 1976, amended in WRDA 1986 to increase the project cost limit, and again in WRDA 2007 to add woody riparian restoration (**Table 6-1**). This plan, and its implementation strategies were developed by the Corps, in consultation with USFWS, to assure compliance with the Fish and Wildlife Coordination Act.

The plan as originally authorized was divided into two parts: fisheries compensation and wildlife compensation. Fisheries compensation centered on fish propagation facilities and providing fisherman access along tributary streams. The wildlife compensation involved on-Project lands habitat development, off-Project habitat acquisition, and the purchase and release of game farm birds (pheasants). **Table 6-2** lists the primary accomplishments of the LSRFWCP from its inception in 1976 to the present.

The off-Project land acquisition was combined with the fisherman access to form the three components of the off-Project land acquisition program, described as X, Y, and Z lands in published documents. The original intent of the program was to acquire 8,400 acres of upland game habitat and hunting lands (X lands), 15,000 acres of chukar habitat and hunting lands (Y lands), and 750 acres of fisherman access (Z

Table 6-1. Lower Snake River Fish and Wildlife Compensation Plan Authorizations

Authorization	Date
Original authorization by the Water Resources Development Act (WRDA) of 1976, Section 102, PL 94-587	October 22, 1976
amended by WRDA 1986, Section 856, PL 99-662	November 17, 1986
amended by WRDA 2007, Section 3165, PL 110-114	November 8, 2007

Table 6-2. Summary of LSRFWCP Fisheries and Terrestrial Wildlife Accomplishments

Accomplishments	Date Complete
Acquisition of XYZ Lands (Off-Project)	1994
Fishing Access	1994
Hunting Access	1994
Hatchery Construction/Transfer	2000
Habitat Development and Evaluation for 10 of 12 indicator species	2002
Game Farm Alternative	2007
Fish Acclimation Facility Construction/Transfer	2010
Habitat Evaluation Procedure/Gap Analysis	2013
Remaining 2 indicator species-riparian habitat developed	2019

lands). The acquisition of X, Y, and Z lands were completed in 1994, which included fishing and hunting access points. The game farm alternative was completed in 2007 after operating for several decades.

Hatchery construction and transfer to the U.S. Fish and Wildlife Service for long term operation and maintenance were completed in 2000, and the fishery satellite and acclimation facilities were completed in 2010. The on-Project lands habitat development has been ongoing, with ten of the twelve habitat indicator species habitat completed in 2012. The remaining habitats and species are scheduled to be completed in 2019, and the overall program will be completed in 2020. The program will be managed under the

Operations Division and long term Operation and Maintenance at Lower Granite Lock and Dam.

A total of 54 management units were classified as wildlife lands along the impounded area of the Snake River. Ten HMUs were identified to be intensively developed (irrigation systems and plantings), 25 HMUs were to be moderately developed (dryland development with water guzzlers and fencing), and the remaining 19 units were to remain undeveloped. Some of the wildlife units that were slated to remain undeveloped have had wildlife water guzzlers installed over the years. There are 12 sites of the 54 that are reserved for mitigation (**Table 6-3**) on Project lands.

Table 6-3. Mitigation Areas under the Lower Snake Compensation Plan within Lower Granite Lands and Their Corresponding Development Levels

Management Area	Total Acres	Management Classification
Chief Timothy HMU	64.3	Intensive Development
Hells Gate HMU	604.0	Intensive Development
Kelly Bar HMU	458.6	Undeveloped
Knoxway Canyon HMU	303.5	Moderate Development
Moses HMU	30.9	Moderate Development
Nisqually John HMU	3030.0	Moderate Development
No Name HMU	201.0	Undeveloped
Transmission Line HMU	232.3	Undeveloped
Wawawai HMU	90.3	Undeveloped
Wilma HMU	32.6	Undeveloped
Upper and Lower Goose Pastures	115.4	Intensive Development

Habitat restoration in the early stages of the LSRFWCP included planting non-native species—such as Russian olive—that grew aggressively, quickly creating food and cover for birds and wildlife. Plantings have since evolved into a more sustainable, native species-focused approach.

Recent plantings have focused on palustrine forest and palustrine scrub-shrub habitat re-establishment, which are cover types that were not historically abundant in the Project area. Orchards in low lands became common in the early 20th century, up until the Project was constructed. Construction of the Project virtually eliminated these orchards and the limited amount of natural palustrine forest that remained.

HMUs that are affiliated with Lower Granite Lock and Dam include lands shown in **Table 6-3**. These lands were developed and/or purchased to provide hunting and fishing opportunities, and are classified as mitigation lands under this Master Plan in order to protect their status.

6.2 HUNTING (HELLS GATE AND OTHER HMUS) - THE PROXIMITY TO URBAN AREAS

Hells Gate HMU, located at river mile 145, is over 700 acres and is adjacent to Hells Gate State Park. Visitor activities include hunting (shotgun and archery), bird watching, horseback

riding, and trail walking (**Figure 6-1**). The area was designated for the purpose of mitigating lost fishing and hunting opportunities, and general management goals are developed with input from the Idaho Department of Fish and Game. During scoping for the Master Plan, some comments were received regarding hunting at this location. Comments mentioned hunting as a safety concern due to the increased usage from non-hunters. Since this area was acquired and

is managed to provide hunting opportunities, this user conflict needs to be addressed. In coordination with the Hells Gate Trails Group, the Corps has developed a trail plan, trail brochure, and maps to explain where the trails are. These materials also explain that non-hunters need to stay on designated trails. Signs also alert non-hunters about the other visitor uses occurring in the area.



Figure 6-1. Hiker at Hells Gate HMU Trails

Because of its location, the topography near the river, ease of access, and the fact that it is the largest HMU in Idaho, Hells Gate HMU is potentially a prime location for youth or disabled persons hunting events. This potential use in the future will also involve increased signage and media coordination.

6.3 ENCROACHMENTS

Vegetation and livestock grazing encroachments are common violations on Corps-managed lands. This is primarily due to the rural and remote location of Project lands and the fact that property surrounding these lands are managed for agriculture and/or livestock. **Figure 6-1** illustrates how trails can impact wildlife lands to include erosion and soil loss.

The Corps Natural Resources Management mission is to manage and conserve natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations. Encroachments on Corps-managed Federal lands directly conflict with that mission. The Corps is, therefore, committed to resolving encroachments by the most expedient and effective means available. It is the intent of the District to recapture use of encroached upon public lands for Federal project operating purposes and general use and enjoyment of the public.

The general policy is to require removal of encroachments, restore the premises, and collect appropriate administrative costs and fair market value for the term of unauthorized use. Policies and procedures are described in the references specified in Northwestern Division Walla Walla District Office Memorandum 1130-1-9, Encroachment Action Handbook (draft).

Exceptions to this general policy are set forth in Engineer Regulation 405 1 12, Real Estate Handbook, Chapter 8.

The purpose of the Encroachment Action Handbook is to prescribe policies and procedures for surveillance and safeguarding of Corps managed lands and easements in order to prevent potential encroachments and to prescribe the actions necessary to remove or resolve existing encroachments. This handbook establishes a program to protect all resources on operating project lands.



Figure 6-2. Granite Point Recreation Area

6.4 CLIFF JUMPING GRANITE POINT RECREATION AREA

The area around Granite Point (located near river mile 113) is a low density recreational area consisting of a parking area, small shelters, and fire pits. The large granite rocks in this area are used by visitors for technical climbs as the top of the rocks provide a spectacular view of the river (**Figure 6-2**). This area is also a hot spot for weekend gatherings, usually including students from Washington State University and the University of Idaho. Many visitors use this area to consume alcohol and jump from the cliffs. Glass containers and cliff jumping are prohibited under Corps regulations, and this information is posted at the bulletin board in the recreation

area. Corps park rangers spend a fair amount of time informing the public of these bans and issuing citations as needed. Additionally, many people like to swim across the river at this location, where the channel is narrower than in other areas. This can be extremely dangerous, especially when combined with alcohol use, as this is an active navigation channel with routine barge traffic. Some comments over the years have included requests that the Corps allow these types of uses in this area, but due to safety concerns, they will continue to be prohibited. Future visitor behavior will be monitored to determine if an alcohol ban also needs to be implemented.

6.5 SWALLOWS BEACH RESTORATION PROJECT

Swallows Park in Clarkston, Washington, is a high density recreational use area receiving around 306,000 visitors per year (as of 2012), and it had a 600-foot swimming beach as part of its original design. For many years, the beach was a popular swimming spot on Lower Granite. Sediment deposition was always an issue at the beach, slowly filling it in, and was dealt with through routine operation and maintenance dredging. Over the years, siltation and sedimentation continued, but dredging wasn't able to be completed because it became extremely difficult and costly, with a great deal of environmental review required. Consequently, safe beach access has not been possible due to shallow waters resulting from sedimentation and poor water quality, including coliform bacteria concerns resulting from high densities of Canada geese (*Branta canadensis*) and other birds at the location. By 2001, the beach was unusable, and the Corps posted warnings about water quality health concerns.

To address this problem, the Corps recently completed a multi-year environmental compliance review to restore a useful swimming area and access to the Snake River, while eliminating the existing beach access area that presents a likely public health/safety concern.

This project would include filling in the degraded former swimming area of Swallows Beach with approximately 21,280 cubic yards of clean soil material with heavy equipment and planting native vegetation at the site. Filling the old swimming area and planting native vegetation would restore the area to a functional and more attractive recreation area for the public with reduced health and safety concerns, reduced long-term operations and maintenance costs, reduced grazing and loitering opportunities

for Canada geese (thereby improving water quality on site). It would also provide a more varied experience for the visiting public through wildlife viewing. A new beach would then be established at the north end of the site.

One of the outcomes of the environmental compliance effort was mitigation that was required under the Clean Water Act for losses of wetland function at the old beach site. In order to meet the mitigation requirements, established by the Washington Department of Ecology as part of the 401 process, the Corps will plant some wetland plant species in the area of the old beach and preserve some wetland areas at other locations on Project lands. The mitigation for this restoration project will result in classification of 25.95 acres of wetland/riparian habitat and 32.18 acres of designated buffers on Corps property as Environmentally Sensitive Areas.

6.6 SEDIMENT DEPOSITION ISSUES

The confluence of the Snake and Clearwater Rivers has always been a place sediment accumulates in the river system as part of the natural habitat forming process provided by functioning rivers. A historic photo from 1972 shows the confluence and sediment accumulation prior to construction of Lower Granite Lock and Dam (**Figure 6-3**).

Since construction of the dam, sediment deposition has become a maintenance issue at the Corps-owned recreation sites at locations such as boat basins, boat ramps, and water intakes for irrigation in habitat management units.

In addition to Corps-managed recreation sites, sediment issues at the Project also affect outgranted recreation sites, such as those owned

by the Corps and managed by others through a lease (Chief Looking Glass Park, Hells Gate State Park Marina, and Hells Canyon Resort and Marina). The Ports of Lewiston and Clarkston are also impacted by sediment deposition at the confluence of the Snake and Clearwater Rivers.

The Programmatic Sediment Management Plan (PSMP) is a plan developed by the Corp to build a framework to address many of these issues.

The PSMP must provide a long-term plan to manage, and prevent if possible, the accumulation of sediment in areas of the lower Snake River reservoirs that interferes with authorized project purposes. Sediment accumulation interferes with the following authorized purposes of the lower Snake River Projects:



Figure 6-3. Sediment Deposition at the Confluence of the Clearwater and Snake Rivers

- Commercial navigation by reducing the depth of the Federal navigation channel to less than the authorized depth (14 feet) when operating at minimum operating pool (MOP), thereby impairing access to port berthing areas, access to navigation locks, and safe movement of tug and multi-barge tows.
- Recreation by limiting water depth at boat basins to less than original design dimensions.
- Fish and wildlife conservation by interfering with irrigation water intakes at HMUs, juvenile ESA-listed fish barge access to loading facilities, and fish barge passage through the reservoirs and locks within the lower Snake River dams.

6.7 PREVENTION OF INVASIVE SPECIES

The issue of invasive species, while not a new issue, has been a specific area of focus for the Corps in the last 10 years. Compliance with Corps regulations and the Endangered Species Act led to the development of a District-wide Integrated Pest Management Plan (IPMP), which was put into full effect in 2012. Approved pesticides, buffers from water, best management practices, and standardized pest management reporting were all presented in the comprehensive plan in 2012.

The Corps has also been working with NMFS and USFWS to complete ESA consultations on the aquatic portion of the IPMP (the Aquatic Pest Management Plan) since 2009, the last time aquatic invasive plant species were treated in the Project area. Until consultation is complete, the Corps cannot conduct aquatic pest management activities but anticipates the need for some focused efforts to bring the invasive species back under control once NMFS and USFWS complete the consultations.

Additionally, the Corps has been engaged on a national level to help prevent the spread of invasive species with watercraft inspection stations and through education on zebra and quagga mussels. The Corps performs annual sampling and monitoring for veliger and adult zebra and quagga mussel in the Lower Granite Lock and Dam reservoir. Samples and monitoring occur at various locations within the system at points determined to be of high risk of introduction. This along with water quality data is shared within the region and with the 100th Meridian Initiative Columbia River Basin Team (an aquatic invasive species prevention organization) to inform future monitoring and sampling.



SECTION 7. AGENCY AND PUBLIC COORDINATION

This section provides information on the public involvement and extensive coordination within the Corps and other affected agencies and organizations, which is a critical requirement in the development or revision of a project Master Plan.

7.1 SCOPING

A public scoping process for the Lower Granite Master Plan revision was initiated in March 2015. Approximately 170 letters/emails were sent to stakeholders (community groups, elected officials, government agencies), and approximately 145 letters were sent to outgrantees (people/organizations that lease land, have licenses, or easements from the Corps) and adjacent landowners inviting them to come to the public meetings and comment on the Master Plan update.

The Corps conducted two public scoping meetings to support an update to the Master Plan: one in Clarkston, Washington, on March 22, and one in Pullman, Washington, on March 23, 2017. The scoping process was an opportunity to get input from the public and agencies about the vision for the Master Plan update and the issues that the Master Plan should address, where possible. About 80 people attended the meeting. During the scoping period, the Corps received about 70 suggestions and comments related to management issues and recreation at the Project. The majority of comments focused on the following:

- Recreational Opportunities
- Real Estate and Access
- Dam Removal
- Control of Invasive Plant Species

Comments compiled from attendees at the public scoping meeting and other sources were used to prepare the draft Master Plan.

7.2 TRIBAL COORDINATION

On March 6, 2017, the Corps sent a letter offering government-to-government consultation to the Confederated Tribes of the Colville Reservation, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Confederated Tribes and Bands of the Yakama Reservation, and the Nez Perce Tribe. No comments were received from the Tribes.

In addition, as part of the master planning process, the Corps invited the Nez Perce Tribe and the CTUIR to take part in the public scoping meetings and provide comments regarding this scoping effort. Coordination on the Master Plan update with the Tribes continued throughout the process.

The Corps will send letters to the CTUIR and the Nez Perce Tribe requesting review and comment on the Lower Granite Master Plan, Draft Finding of No Significant Impact (FONSI), and Environmental Assessment.

7.3 AGENCY INVOLVEMENT AND COORDINATION

All development will be coordinated with appropriate Federal, State, and local agencies throughout the planning process.

7.3.1 Local Agencies

The Confluence Waterfront Coalition is an interest group made up of local cities, counties, agencies, and private individuals within and around the confluence area of the Snake and Clearwater Rivers in Lewiston, Idaho, and Clarkston and Asotin, Washington. The group focus is the economic development and vibrancy of the local communities.

Attendees include the Port of Whitman, Port of Lewiston, Port of Clarkston, City of Lewiston,

City of Clarkston, City of Asotin, Asotin County, Nez Perce County, Riverquest, Idaho History Tours, House of Bridablik, Friends of the Airport, Hells Gate State Park, Avista Utilities, and representative from Cathy McMorris Rodgers' office.

The Corps briefed participants on the Lower Granite Master Plan process and project status at a Confluence meeting held January 17, 2018 in Clarkston, Washington.

7.3.2 Fish and Wildlife Agencies – Federal and State

Because Lower Granite Dam affects interstate runs of anadromous salmonids (Pacific salmon, and steelhead trout), valued both as commercial and sport fish, many Federal and state fish and wildlife agencies have taken part in the assessment and recommendation of compensatory measures for losses of fish resources resulting from the Project. These agencies are the U.S. National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Washington Department of Fish and Wildlife, the Idaho Department of Fish and Game, and the Oregon Department of Fish and Wildlife.

7.4 THE U.S. ARMY CORPS OF ENGINEERS WEBSITE

The Corps developed a webpage (<http://www.nww.usace.army.mil/Locations/District-Locks-and-Dams/Lower-Granite-Master-Plan/>) to provide information, updates, and collect comments for the Master Plan update. The draft and final Master Plan with associated documents will be placed on this webpage for the public to view.

7.5 THE DRAFT 2018 LOWER GRANITE MASTER PLAN AND ENVIRONMENTAL ASSESSMENT

Comments received from review of the Draft Master Plan, Draft FONSI, and Environmental Assessment will be summarized with comment responses and included in **Appendix F** of the final 2018 Master Plan and in the final FONSI. The Master Plan and Environmental Assessment will then be finalized and submitted for approval.



SECTION 8. SUMMARY OF RECOMMENDATIONS

This section provides the recommended land classifications for the updated Lower Granite Master Plan at a detailed level (by each management area) and includes a list of recommendations for recreation, natural resources, and public outreach.

8.1 GENERAL

This updated Lower Granite Master Plan presents an inventory of land resources and how they are classified, existing park facilities, analysis of resource use, anticipated influences of Project operation and management.

This Master Plan is a living document establishing the basic direction for management and development of the Project in agreement with the capabilities of the resource and public needs. The plan is flexible and allows for supplementation in the case changes are required prior to the next Master Plan update. The Master Plan will be periodically reviewed to facilitate the evaluation and utilization of new information as it becomes available.

The Lower Granite Master Plan will guide the use, development, and management of the Project in a manner that optimizes public benefits within resource potentials and the authorized function of the Project while remaining consistent with Corps policies, regulations, and environmental operating principles.

8.2 RECOMMENDATIONS

8.2.1 Proposed Land Classification Changes

The proposed land classifications for the 2018 Master Plan is summarized in the table below. **Table 8-1** presents a summary of land classifications by acres for 2017 and for the 2018 Master Plan. **Appendix E** provides a full list of land classification changes for each management area within the Project and the reasons for those changes. **Figure 8-1** provides a visual representation of the land classification changes between 1974 and 2017 and between 2017 and 2018.

Table 8-1. Land Classification Changes from Existing Conditions in 2017 to 2018

Land Classification Nomenclature	Acres 2017	Acres 2018
Project Operations	542.0	366.2
High Density Recreation	842.3	804.5
MRM-Low Density Recreation	200.0	44.7 ¹
MRM-Wildlife Management	757.5	1738.0 ¹
MRM-Vegetation Management	972.6	0 ¹
MRM-Future or Inactive Recreation Areas	32.2	27.0 ¹
Environmentally Sensitive Areas	117.0	111.3
Mitigation	5,162.6	5,545.0
	8,626.2	8,636.7²

1. Lands classified under MRM are managed for all purposes listed. Note: MRM Land classification can include Low Density Recreation, Future or Inactive Recreation Lands, Wildlife Management, and Vegetation Management.

2. Increase in acreage is due to open water designation changing to a land classification through natural sediment deposition and fill due to the Swallows Beach Mitigation Project.

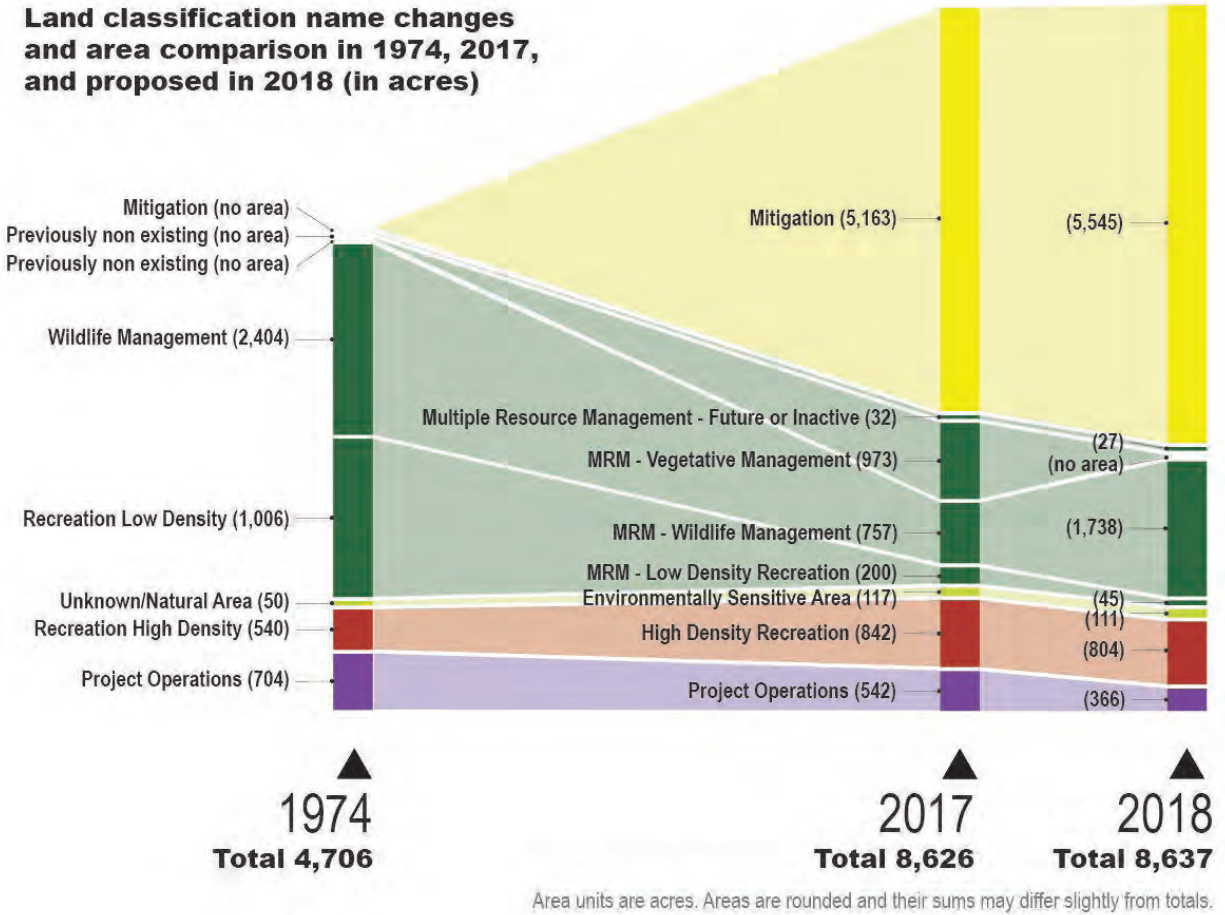


Figure 8-1. Land Classification Changes between 1974 and 2017 and between 2017 and 2018

8.2.3 Recreation Recommendations

The following recreation recommendations have been identified:

- Swallows beach restoration is a high priority. The community has expressed health and safety concerns about the area, which was closed to the public in 2001 due to high fecal coliform counts. Project staff will coordinate compliance through the appropriate agencies, will continue seeking partners, and will work to secure funding to complete the project.
- The Clearwater-Snake River National Recreation Trail is a great asset to the Lewis-Clark Valley that can be further improved. Future improvements should include expansion to downtown Lewiston and Clarkston and their respective trail systems. Furthermore, signage and wayfinding enhancements should be made to guide the trail users and improve their experience. Additionally, the Corps should develop a maintenance regime and continue to seek funding for routine and non-routine trail maintenance (e.g., paving).
- Visitor safety and security concerns have been expressed by the public. The problem stems from unsupervised juveniles and an increasing transient population. Alcohol, drug usage, and mental health issues typically are catalysts for crime being perpetrated in Corps parks. Project staff will continue to provide visitor assistance patrols and work with local law enforcement partners. Additional security measures that may be taken include installing gates on parks to control access during periods of darkness and placing security cameras in high incident areas.
- Regular surveys, counts, and other methods to collect data and monitor trends will be conducted to determine user capacity and environmental sustainability.

- Further development in High Density Recreation areas such as Chestnut or Swallows Park may be possible, but it should be done with public input from future stakeholder meetings. Partnerships should be formed to fund such developments.

8.2.4 Natural Resource Recommendations

The following natural resource recommendations have been identified:

- Invasive plant species can significantly degrade aquatic and wildlife habitat, increase soil erosion, and outcompete native species that fish and wildlife depend upon and that are culturally significant to Tribes. Species should be controlled using tools provided in the Integrated Pest Management Plan. Additionally, the Aquatic Pest Management Plan consultations with NMFS and USFWS need to be completed so aquatic pests can be controlled.
- Existing Hells Gate trails are currently shared by those on horseback, foot, or bicycle. Trails remain open for shared use as long as users do not have serious conflict or seriously degrade habitat. In the event of ongoing user conflicts, Project staff may need to assign users to specific areas.
- Inventory and monitor informal trails at Hells Gate. Trails should be discouraged and removed when impacts to natural resources and sensitive areas are occurring.
- Continue to enhance riparian and upland biodiversity through restoration projects that focus on planting native trees, shrubs, and groundcovers.
- Continue collaboration with Washington State Department of Fish and Wildlife and Idaho Department of Fish and Game on Lower Snake River Compensation Plan mitigation lands.

8.2.5 Education, Information, and Public Safety Recommendations

The following education, information, and public safety recommendations have been identified:

- Utilize current digital technologies so users can access digital information that is pertinent to the project (e.g., trail closures, hunting season, current conditions, special events, etc.).
- Seek opportunities to partner with regional Tribes and other groups to provide educational and interpretive signs, activities, and programming.
- Lower Granite South Shore Visitor Operations should continue to provide the public tours; provide recreation, natural resource and water safety information; and to enhance the visitor experience.

8.3 FUTURE DEMANDS

Recommendations in this Master Plan reflect current inventory data, recreation trends, and forecasts. As technology and public demand change and new recreational opportunities arise, Corps staff will investigate the feasibility of new activities and evaluate proposed changes and additions to this Master Plan for potential conflicts, opportunities, and environmental impacts.



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APPENDIX A. LEGISLATIVE HISTORY OF LOWER GRANITE LOCK AND DAM

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APPENDIX A

LEGISLATIVE HISTORY OF LOWER GRANITE LOCK AND DAM

Item 1 - Legislative History

The legislative history leading to authorization of Lower Granite Lock and Dam is lengthy, dating back to 1902, when the first formal proposal for the improvement of the lower Snake River was adopted by Congress. The Rivers and Harbors Acts of 1910 and 1935 authorized channel improvement along the Snake River, providing a channel dimension of 60-foot width and 5-foot depth. A synopsis of subsequent important legislation and related actions has been prepared to afford an understanding of events leading to the construction of Lower Granite Lock and Dam.

a. Rivers and Harbors Act of 1945

Public Law 14, Seventy-Ninth Congress, First Session, authorized construction of four locks and dams at river miles 4, 57, 93, and 135 on the Snake River, supplemented by open-channel improvement to provide a minimum depth of 5 feet over a bottom width of 150 feet outside the pools. The authorized plan was presented in the earlier House Document 704, Seventy-Fifth Congress, Third Session, which proposed that the open-river improvement be replaced by six locks and dams, when justified.

(1) Washington, D.C., Public Hearings

Proponents of House Document 704 held a public hearing in Washington, D.C., in 1945, where they presented voluminous data in support of immediate slackwater navigation to Lewiston; and the economic consequences to the nation and the region which would be caused by any delay.

(2) Local Public Hearings

At that time, local interests in general wanted the adoption of a comprehensive plan in the interest of navigation for the coordinated development of the Columbia and Snake Rivers, through a series of locks and dams from The Dalles, Oregon, to Lewiston, Idaho.

(3) Fishing Interests

The fishery interests, in general, did not oppose the adoption of a comprehensive plan of improvement, but desired that further developments on the Columbia and Snake Rivers be held in abeyance until the effect on the fishing industry of Bonneville and Grand Coulee Dams was determined.

b. House Document 531

At the request of Congress, the Corps of Engineers undertook a complete review of the original reports on the Columbia River and tributaries. Studies for that review were carried on during

the last half of the 1940's, and resulted in House Document No. 531, Eighty-First Congress, Second Session, dated 20 March 1950. That report, which is the basis for much of the water resource development that has taken place in the Columbia River Basin during the past two decades, considered four lower Snake River dams at River Miles 9.7, 44.7, 72.2, and 113.1; and they became a part of the overall plan of development. In House Document 531, Lower Granite, at River Mile 113.1, had a reservoir elevation of 715.

c. House Document 403

In 1955, Congress requested a view of House Document 531. That review was completed in 1958, adopted by Congress, and ordered to be printed as House Document 403 in May 1962. That review report again summarized the four lower Snake River dams, and proposed that the Lower Granite reservoir be raised from Elevation 715 to 735. Little Goose Design Memorandum No. 1, Site Selection and Pool Determination, was published 13 February 1961; and moved the Lower Granite Dam location downstream from river mile 113.1 to river mile 107.5.

d. Public Works Appropriation Act of 1962

This law appropriated funds for the initiation of detailed planning of Lower Granite, based on the project described in House Document 403. This detailed planning led to the publication of Lower Granite Design Memorandum No. 2, Upper Pool Determination, dated 12 April 1963, which increased the reservoir level from elevation 735 to 738.

e. Public Law 89-16, Dated 30 April 1965

This legislation appropriated funds for the start of construction of a project at the head of the Little Goose pool, approximately 107.5 miles upstream from the mouth of the Snake River, with a reservoir at elevation 738.

**APPENDIX B. LOWER
GRANITE LOCK
AND DAM MASTER
PLAN, CLARKSTON,
WASHINGTON,
ENVIRONMENTAL
ASSESSMENT**

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**US Army Corps
of Engineers**
Walla Walla District

**LOWER GRANITE LOCK AND DAM
MASTER PLAN**

CLARKSTON, WASHINGTON

Environmental Assessment

ADMINISTRATIVE RECORD – DO NOT DESTROY

PROJECT FILE NUMBER: PM-EC-2017-0028

July 2018

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Appendix A Federal Natural Resources Law Compliance and Biological Evaluation

SECTION 1 - INTRODUCTION

1.1 Introduction

This environmental assessment (EA) considers and describes potential environmental effects associated with adoption of an updated Master Plan (MP) for management of natural, cultural and recreational resources at the Lower Granite Lock and Dam Project (Project). The new MP would be a strategic land use management document that guides the comprehensive management and development of all project recreation, natural and cultural resources throughout the life of the water resource project. The new MP would promote the efficient and cost effective management, development, and use of project lands. It is a vital tool for the responsible stewardship and sustainability of project resources for the benefit of present and future generations.

As required by the National Environmental Policy Act (NEPA) and subsequent implementing regulations promulgated by the Council on Environmental Quality, this assessment is prepared to determine whether the action proposed by the U.S. Army Corps of Engineers (Corps) constitutes a “. . . major Federal action significantly affecting the quality of the human environment . . .” and whether an environmental impact statement is required. The EA is prepared pursuant to NEPA, Council on Environmental Quality (CEQ) regulation (40 CFR, 1500-1517), and the Corps’ implementing regulation, Policy and Procedure for Implementing NEPA, Engineering Regulation (ER) 200-2-2 (Corps 1988), Title 33, Code of Federal Regulations, Part 230. The EA covers the action of adopting a new MP. Future site-specific development, operations and maintenance actions that may transpire following adoption of the new MP, would undergo separate (tiered) analysis as required by NEPA.

The National Environmental Policy Act is a full disclosure law, providing for public involvement in the NEPA process. All persons and organizations that have a potential interest in major actions proposed by a federal agency – including other federal agencies, state and local agencies, Native American tribes, interested stakeholders, and minority, low-income, or disadvantaged populations are encouraged to participate in the NEPA process.

The new MP would guide the Corps responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands, waters, and associated resources. The MP would be a dynamic operational document projecting what could and should happen over the life of the project and is flexible based upon changing conditions. The MP would deal in concepts, not details, of design or administration. Detailed management and administration functions would be addressed in a five year Operational Management Plan (OMP), which implements the concepts of the MP into operational actions. Tiered analysis of the OMP is the primary way that future detailed, site specific actions would be addressed fully under NEPA.

The MP would not address dam management procedures and functions, including operations and maintenance of the dam and hydropower facilities, navigation locks and channel, levees, fish passage ladders/facilities or emergency flood operations.

1.2 Project Location and Background

The Lower Granite Lock and Dam Project is located on the Snake River, at river mile (RM) 107.5 (Figure 1). The dam and nearly all of the Snake River portion of the reservoir lie in southeastern Washington, with the right abutment of the dam in Whitman County and the left abutment in Garfield County. Lower Granite Lake extends up the Snake River into Asotin County, Washington at approximately RM 147, and up the Clearwater River, from its confluence with the Snake River, in Nez Perce County, Idaho to RM 12.

This congressionally authorized project consists of Lower Granite Dam, navigation lock, powerhouse, a fish ladder and associated facilities. The project provides hydroelectric generation, navigation, recreation and incidental irrigation. The dam is about 3,200 feet long with an effective height of 100 feet. The dam is a concrete gravity type, with an earth fill right abutment embankment. It includes a navigation lock with clear dimensions of 86 by 674 feet; and an eight-bay spillway that is 512 feet long, with eight 50-foot by 60.5-foot radial gates.

The lake (Lower Granite Lake) created by the dam extends upstream on the Snake River about 40 miles to the Clarkston, Washington/Lewiston, Idaho area, more than 460 river miles from the Pacific Ocean. The Corps constructed about eight miles of levees around Lewiston to help protect lives and property from potentially destructive high water conditions. Since construction, the levees have prevented more than \$39.3 million in potential flood damages. In 2015, traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo that amounted to more than 1.1 million tons.

The original master plan document was completed in 1974. It is necessary to update the 1974 MP to comply with new Corps policy in Engineering Pamphlet (EP) 1130-2-550 (Corps 2013), and to respond to regional and project changes that have occurred since 1974, including increased public use.

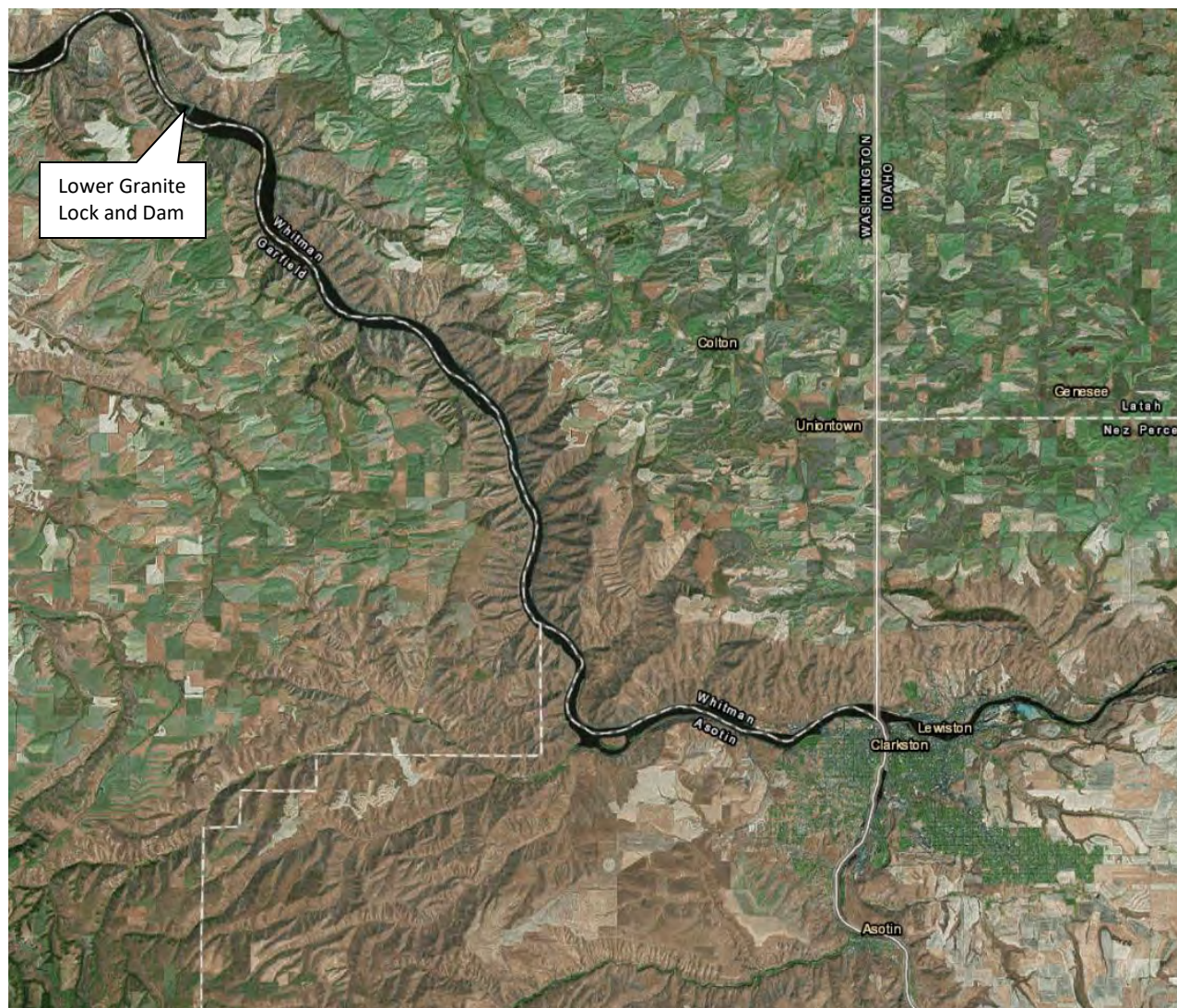


Figure 1-1. Lower Granite Lock and Dam Project Area.

1.3 Authorities for the Project

The first formal proposal by Congress for the improvement of the Snake River for navigation and other purposes was made in 1902. This was followed by other actions, notably in 1910 and 1935, leading eventually to the Rivers and Harbors Act of 1945, which authorized construction of a series of dams on the lower reach of Snake River downstream from Lewiston. House Document 531, Eighty-First Congress, Second Session, dated 20 March 1950, proposed a four-dam plan with Lower Granite as the last (or most upstream) unit of the four. Construction funds for Lower Granite were first appropriated under Public Law 89-16, dated 30 April 1965. Construction was completed in 1984.

- **Authorized Purposes**

The purposes of the Lower Granite Lock and Dam Project, as originally authorized, include navigation, hydroelectric power, incidental irrigation, with fish and wildlife, and recreation added later as additional purposes. As stated above, the MP would not address authorized purposes of navigation, hydroelectric power, or incidental irrigation.

- **Navigation, Hydroelectric Power, Incidental Irrigation**

Public Law (PL) 79-14, River and Harbor Act of 1945, provides authority for original project purposes of navigation, hydroelectric power, and incidental irrigation.

Navigation: The Lower Granite Dam navigation lock is the last of eight locks encountered in the Columbia-Snake Inland Waterway, a 465-mile river highway that allows barge transport of commodities between the Pacific Ocean and Lewiston, Idaho. The navigation channel is maintained at a depth of 14 feet and a width of 250 feet at the minimum operating pool (MOP).

Hydroelectric Power: Lower Granite Dam has six 135-megawatt turbines, for a total generating capacity of 810 Megawatts (MW).

Incidental Irrigation: The Lower Granite Dam is a run-of-the-river dam, which means it does not store/collect water for irrigation purposes. However, the reservoir created by Lower Granite Dam provides incidental irrigation benefits by making access and use of the existing water, by persons with a valid water right issued by the State of Washington, easier.

- **Recreation**

The Flood Control Act of 1944 (PL 78-534), provided authority to add recreation as a purpose.

The Corps is the leading Federal provider of outdoor recreation. As host to 370 million visitors per year, the Corps plays a major role in meeting the Nation's outdoor recreation needs. Popular recreation activities around Lower Granite Lock and Dam include fishing, swimming, picnicking, boating, hunting, and camping. There are several day-use areas, campsites, parks, habitat management units, boat launch facilities, and marinas.

- **Fish and Wildlife**

When Congress authorized the Lower Snake River Projects (LSRP), including the Lower Granite Lock and Dam, the legislative language did not address fish and wildlife losses resulting from the LSRP or mitigation for any of the losses. Under the Fish and Wildlife Coordination Act of 1958 (FWCA) however, both analysis of fish and wildlife impacts associated with Federal water projects and compensation for the loss of fish and wildlife resources and habitat are required. To address FWCA compliance requirements for the

LSRP, the US Army Corps of Engineers (Corps) developed the Lower Snake River Fish and Wildlife Compensation Plan (LSRFWCP)

The LSRFWCP is a negotiated settlement agreed to by the Corps, Washington Department of Fish and Wildlife (WDFW) and the U.S. Fish and Wildlife Service (USFWS). Its intent is to mitigate for the loss of fish and wildlife resources and their habitat, as well as for the loss of fish- and wildlife-oriented recreational opportunities caused by the construction of the four lower Snake River dams (Corps, 1976). The LSRFWCP was published in June, 1975 and authorized by the Water Resources Development Act (WRDA) of 1976. The LSRFWCP was subsequently amended by WRDA 1986 and WRDA 2007. The alternatives address land use classifications related to LSRFWCP mitigation requirements

1.4 Purpose and Need

The proposed action is to adopt an updated Project MP for the comprehensive management and development of natural, recreational and cultural resources at the Project. The updated MP would promote the efficient and cost effective management, development, and use of project lands and would be a vital tool for responsible stewardship and sustainability of project resources for the benefit of present and future generations.

The purpose of the proposed action is to provide a comprehensive description of the Project, a discussion of factors influencing resource management and development, identification and discussion of special issues, a synopsis of public involvement and input to the planning process, and description of past, present, and proposed development. It would also incorporate current Corps land use classification standards, include contemporary requirements mandated by federal environmental laws, and better reflect the Corps Environmental Operating Principles, natural resource management mission and environmental stewardship and ecosystem management principles.

Updating the MP is needed because the existing MP is more than 40 years old and provides an inadequate base with which to evaluate contemporary (current and future) land and resources management (e.g. increasing demand for recreational opportunities). The updated MP would comply with new policy found in Corps EP 1130-2-550, which requires the Project to focus on particular qualities, characteristics, and potentials of the Project and provides consistency and compatibility with national objectives and other state and regional goals and programs. The approval and adoption of the MP would assure the requirements of Corps policies are met and comments from the public, local, state, federal agencies and tribes are addressed.

Corps regulations require each Civil Works operating project to develop a master plan. As stated in the EP 1130-2-550, MP goals must include the following:

- Provide the best management practices to respond to regional needs, resource capabilities, suitabilities, and expressed public interests consistent with authorized project purposes.
- Protect and manage Project natural and cultural resources through sustainable environmental stewardship programs.
- Provide public outdoor recreation opportunities that support Project purposes and public demands created by the Project itself while sustaining Project natural resources.
- Recognize the particular qualities, characteristics, and potentials of the Project.
- Provide consistency and compatibility with national objectives and other state and regional goals and programs.

Due to a combination of age, changes in techniques and methods required by Corps policy, changes for endangered species management, as well as substantial increases in public use of the Project, the 1974 MP no longer fulfills the intended purpose. An all-inclusive approach is needed to respond to public requirements while meeting all other Project goals. The proposed MP would be a dynamic document that deals in management concepts, not in the specific details of design or administration. It would provide for balanced resource management under special programs, such as Environmentally Sensitive Areas, cultural resources protection, and protection of endangered species and critical habitat. The proposed MP would respond to increased and changing use, visitor desires, and would bring the Project into compliance with current policy.

SECTION 2 – ALTERNATIVES

2.1 Identification of Alternatives

This section identifies a range of alternatives that may respond to the purpose and need identified in Section 1.4, above. A reasonable range of alternatives was initially considered and discussed at a comparable level of detail. The proposed update of the MP is directed by specific Corps policy which informs consideration of alternatives for strategic project development and management. Alternatives are screened out if they do not conform to policy and don't meet the stated purpose and need.

The alternatives initially considered in this EA include:

Alternative 1: No Action Alternative. Current management based on strategy and guidelines in the 1974 MP with updates in amendments and legal mitigation requirements since 1974.

Alternative 2: Balanced Alternative (Proposed MP). MP update based on new Corps policy, balancing designed visitor use with environmental and cultural resource sustainability.

Alternative 3: Wildlife Alternative. MP update focused on preservation and enhancement of wildlife resources and habitat. Corps Project personnel identified potential changes in land classifications that would benefit wildlife.

Alternative 4: Recreation Alternative. MP update focused on expanding access and visitor facility development. Project personnel Identified potential changes in land classifications that would benefit recreational opportunities.

Master plans Descriptions of the current land classifications to be used in the updated master plan alternatives are as follows:

- **Project Operations:** These are lands required for the dam and associated structures, administrative offices, maintenance compounds, and other areas used to operate and maintain the Project.
- **High Density Recreation:** These lands are designated for intensive recreational use to accommodate and support the recreational needs and desires of Project visitors. They include lands where existing or planned major recreational facilities are located; and allow for developed public recreation facilities, concession development, and high-density or high-impact recreational use.
- **Multiple Resource Management:** These are lands managed for one or more of the activities described in the following bullets:
 - **Low Density Recreation:** These lands emphasize opportunities for dispersed or low-impact recreation use.

- **Wildlife Management:** These lands are designated for wildlife management, although all Project lands are managed for fish and wildlife habitat in conjunction with other land uses.
- **Vegetation Management:** These lands focus on the protection and development of forest resources and vegetative cover, although all Project lands are primarily managed to protect and develop vegetative cover in conjunction with other land uses.
- **Recreation-Future Development:** These are lands where recreation areas are planned for the future, or lands that contain existing recreation areas that are temporarily closed.
- **Environmentally Sensitive Area:** These are lands where scientific, ecological, cultural, or aesthetic features have been identified.
- **Mitigation:** These are lands specifically designated to offset fish and wildlife habitat losses associated with the development of the Project.

Table 2-1 presents the proposed changes in land classification between existing conditions in 2017 and future land use classification areas by land classification units for the four proposed alternatives.

Table 2-1. Alternative Matrix. Acres by Land Classification for each Alternative.

Land Classification Nomenclature 2017	Alt 1 No Action	Alt 2 Balanced	Alt 3 Wildlife	Alt 4 Recreation
Operations	542	366.2	273.8	351.3
High Density Recreation (HDR)	842.3	804.5	804.5	809.4
Multiple Resource Management (MRM) Low Density Recreation (LDR)	200	44.7 ¹	36.5 ¹	65.3 ¹
Multiple Resource Management (MRM) Wildlife Management (WM)	757.5	1738 ¹	1838.6 ¹	1727.4 ¹
Multiple Resource Management (MRM) Vegetation Management (VM)	972.6	0 ¹	0	0
Multiple Resource Management (MRM) Future or Inactive Recreation Areas (FIRA)	32.2	27 ¹	27	27
Environmentally Sensitive Areas	117	111.3	111.3	111.3
Mitigation	5162.6	5545 ²	5545 ²	5545 ²
Totals	8626.2	8636.7	8636.7	8636.7

Source: Nomenclature from Engineering Pamphlet 1130-2-550

2-2

¹ Lands classified under Multiple Resource Management are managed for all purposes listed. Note: MRM land designation can include low density recreation, future or inactive recreation areas, wildlife management, and vegetation management.

² Increase in acreage is due to open water designation changing to appropriate adjacent land classification through natural sediment deposition.

2.2 Screening of Alternatives

When screening alternatives, the Corps is obligated to consider the stated purpose and need (Section 1.4) and assure compliance with applicable laws/regulations and Corps policies. Project personnel evaluated all available options and attempted to develop a reasonable range of alternatives focusing on balanced, wildlife, and recreation uses. The Corps developed the following general screening criteria for all alternatives considered:

- A. Provide the best management practices to respond to regional needs, resource capabilities, suitability's, changing use and expressed public interests consistent with authorized Project purposes.
- B. Protect and manage Project natural and cultural resources through sustainable environmental stewardship programs; e.g. Environmentally Sensitive Areas; protection of endangered species and critical habitat; and cultural resources protection.
- C. Provide public outdoor recreation opportunities that support Project purposes, public demands created by the Project itself while sustaining balance with project natural resources;
- D. Recognize the particular qualities, characteristics, and potentials of the Project;
- E. Provide consistency and compatibility with national objectives and other state and regional goals and programs;
- F. Comply with specific requirements for Corps Master Plan policy, environmental laws, and regulations.

Table 2-2 illustrates screening of the four alternatives for each of the criteria described above. Alternatives are marked as "Y" if they meet the definition of the criteria and "N" if they do not. Only Alternative 2 meets all criteria.

Table 2-2 Alternatives by Screening Criteria

Alternative	Criteria					
	A	B	C	D	E	F
1- No Action Alternative	N	Y	N	N	N	N
2- Balanced Alternative (Proposed MP)	Y	Y	Y	Y	Y	Y
3- Wildlife Alternative	N	Y	N	Y	N	Y
4- Recreation Alternative	N	Y	Y	Y	N	Y

For Alternative 1 (No Action), the Corps would continue to use the 1974 MP with its associated management practices, and not implement a MP update. The 1974 MP would not update a regional analysis of recreation and ecosystem needs, project resource capabilities and suitability, recreation program analysis, and cumulative effects assessment, which are essential to the balanced approach and requirements of current Corps MP policy. Although the Corps currently uses the 1974 MP, the document does not fulfill all current Corps requirements for an approved MP. Alternative 1 will be carried forward in this analysis as required under CEQ, providing a basis for comparison with other alternatives.

Alternative 2 (Balanced MP) would meet all the conditions of the stated purpose and need and responds to current Corps policy and regulations. It would provide the required analysis for regional needs, resource capabilities and suitability, and a comprehensive recreation program. Alternative 2 will be carried forward in this analysis as the Proposed MP.

2.3 Alternatives Removed From Further Consideration

Alternative 3, “Wildlife Focus” was developed to include an emphasis on changing land classifications to enhance Project wildlife values and habitat. Project personnel evaluated all possible locations and identified a limited number of land classification changes that would improve wildlife resources. As shown in Table 2-1, the proposed changes in land classifications would include the transfer of small areas of Operations and Multiple Resource Management-Low Density Recreation to Multiple Resource Management-Wildlife Management, resulting in a change of approximately 100 acres. Alt 3 does not meet A, C or E of the screening criteria, so it was not carried forward for further analysis.

Alternative 4, “Recreation Emphasis”, was developed to include an emphasis on changing land classifications to enhance Project recreation values and opportunities. Project personnel evaluated all possible locations and identified a limited number of land classification changes that would improve recreation resource opportunities. As shown in Table 2-1, the proposed changes in land classifications would include the transfer of small areas of Operations and Multiple Resource Management-Wildlife Management to High Density Recreation and Multiple Resource Management-Low Density Recreation, resulting in a change of approximately 25 acres. Alternative 4 does not meet A and E of the screening criteria, so it was not carried forward for further analysis.

Neither Alternative 3 nor Alternative 4 fully respond to the purpose and need identified for this action. Of critical importance is the need to emphasize that an approved Corps MP would be stewardship driven and must seek to balance recreational development and use with protection and conservation of natural and cultural resources. These alternatives do not consider project-wide resource capability and suitability, and are not consistent with multiple use authorized project purposes. Alternative 3 and Alternative 4 have, therefore, been eliminated from further consideration as not satisfying the purpose and need for the proposed action, as identified in Section 2.2 above.

2.4 Alternatives Carried Forward for Detailed Analysis

2.4.1 General

The following section generally describes Alternative 1, No Action, using the 1974 MP, with supplements and updates to 2017, and Alternative 2, the Proposed MP. The 1974 MP and Proposed MP, written many years apart, were developed based on different regulations and Corps policies. No comprehensive revision to the MP has been done since 1974. The Proposed MP is a conceptual planning document that does not direct specific actions, such as ground disturbing activities that would cause direct impacts to recreation, natural and cultural resources. Using the 1974 MP or the Proposed MP would influence planning and management of the Project and how all resources are best administered.

The 1974 MP was based on MP guidance at that time. The document envisioned and described a number of recreation amenities, some of which were never constructed. The Proposed MP would address management and policy necessary to accommodate regional and local changing conditions at the Project. Of substantial importance for the update is the addition of new recreation uses to be considered and a significant growing public demand for recreation and natural resources.

Although somewhat different in content, generally both documents utilize a standard practice of identifying resource objectives, land classifications, and designation of management units for recreation use potential, resource protection, and maintenance practices. Project Resource Objectives (RO) are clearly written statements that are specific to a project or project area. They specify the selected option(s) for resource use, development, and management. They must be consistent with authorized project purposes, Federal laws and directives, regional needs, resource capabilities, and expressed public desires. Formulation and establishment of ROs for each civil works project is required by Engineer Regulation (ER) 1130-2-435, (Corps 1987). Project Land Classifications indicate the primary use for which the project lands are managed. A Project management unit is a tract of land designated, based on land classification, to achieve or contribute towards the achievement of project objectives.

2.4.2 Alternative 1 – No Action Alternative

The Lower Granite Master Plan was completed in 1974. It was the first multiple resource inventory and analysis in Lower Granite Lock and Dam's history. It has undergone several supplements since the original Master Plan was developed in 1974. Table 2-3 identifies the total acres for each land classification that changed between 1974 and 2017, as well as the changes to the nomenclature that resulted from a recent update to Engineer Pamphlet 1130-2-550.

Table 2-3. Land Classification in 1974 Lower Granite Master Plan and in 2017.

1974		2017	
Land Classification Nomenclature	Acres	Land Classification Nomenclature	Acres
Project Operations	704.4	Project Operations	542
Recreation Low Density	1006.3	Multiple Resource Management (MRM)–Low Density Recreation	200
Recreation High Density	540.2	High Density Recreation	842.3
Wildlife Management	2404.4	MRM–Wildlife Management	757.5
		MRM–Vegetation Management	972.6
		MRM–Future or Inactive Recreation Areas	32.2
Mitigation		Mitigation	5162.6
Unknown/Natural Area	50.3	Environmentally Sensitive Areas	117
Total Acres	4705.6		8626.2

The land classification changes that occurred during this period were the result of a number of actions. Six master plan supplements occurred between 1978 and 2013. A supplement is a minor change to a master plan such as a change in land classification or facility footprint. Supplements are prepared as often as necessary to ensure master plans remain relevant. Other land classification changes were the result of the real estate actions or requirements associated with the LSRFWCP. Full details of the land classification changes are contained in the Proposed MP.

The LSRFWCP was initiated to provide fish and wildlife compensation for construction of the four mainstem lower Snake River dams (Ice Harbor, Lower Monumental, Little Goose, and Lower Granite), which impounded approximately 140 miles on the lower Snake River. The LSRFWCP, published in June 1975, was authorized by the Water Resources Development Act (WRDA) of 1976, amended in WRDA 1986 to increase the project cost limit, and again in WRDA 2007 to add woody riparian restoration. It was a negotiated mitigation settlement developed to compensate for wildlife habitat and hunting and fishing opportunity losses resulting from the construction and operation of the four dams (Corps 1975).

The 1974 MP was a systematic organization of land use allocations, development plans, and design criteria for a new Project. It was accomplished with an inventory and analysis of regional and project resources, as well as the application of Corps policy, responding to public needs and public desires. The methodology used in 1974 has changed since that time and is no longer in compliance with current Corps direction. The 1974 MP focused on Plans of Development for specific location and was later modified and amended as described above.

2.4.3 Alternative 2 - Proposed MP

Alternative 2, the Proposed MP, would replace the 1974 MP. The intent of the Proposed MP is to develop a guide for the sustainable use of resources at the Project. To fully authorize changes in facilities, use and resource management, and to accommodate regional changes and requirements such as project operations to meet Endangered Species Act (ESA) requirements, a planning document is required that meets Corps policy. The EP 1130-2-550, (Corps 2013) provides the following MP guidance. "A current, approved MP is necessary before any new development, construction, consolidation, or land use change can be pursued. These activities will not be included in budget submissions unless they are included in an approved MP". The primary objective of this Proposed MP is to publish a clear, concise, and strategic land use document that will guide the comprehensive management and development of all Project recreational, natural, and cultural resources.

Alternative 2 would help focus on four primary components that were not included in the 1974 document, or that require expanded analysis, including: (1) regional investigation of recreational and ecosystem needs; (2) Project resource capabilities and suitability; (3) expressed public interests that are compatible with authorized purposes; and (4) NEPA compliance, including a Cumulative Effects Assessment.

The Proposed MP update would provide a current comprehensive description of the Project, a discussion of factors influencing resource management and development, identification and discussion of special issues, a synopsis of public involvement and input to the planning process, and description of past, present, and proposed future development. The Proposed MP would incorporate current Corps of Engineers land use classification standards (including updated land use classification maps), include contemporary requirements mandated by federal environmental laws, and better reflect the Corps of Engineers Environmental Operating Principles, natural resource management mission and environmental stewardship and ecosystem management principles.

The Proposed MP would include a description of Resource Objectives which were not part of the 1974 MP. ROs are clearly written statements that respond to identified issues and specify measurable and attainable activities for resource development and/or management of the lands and waters under jurisdiction of the Walla Walla District at Lower Granite Lock and Dam. The objectives would be consistent with authorized project purposes, Federal laws and directives, and they take into consideration regional needs, resource capabilities, State Comprehensive Outdoor Recreation Plans, cultural and natural resources significant to regional Tribes, and public input. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in the proposed MP.

The Proposed MP would classify project lands on environmental and socioeconomic considerations, public input, and an evaluation of past, present and forecasted trends.

Proposed MP Resource Objectives

1. General Resource Objectives

- a. **Safety and Security** – Provide use areas and facilities that are safe and free of crime.
- b. **Aesthetic Resource** – Plan all management actions with consideration given to landscape quality and aesthetics.
- c. **Facilities Management** – Ensure all current and future facilities are maintained and meet Federal and State design standards.
- d. **Real Estate Management** – Prevent unintentional trespass and negative impacts associated with encroachments on government property while allowing State, County, municipal, and private entities opportunities to provide public recreation services and revenue-generating opportunities.
- e. **Water Quality** - Comply with Federal and State water quality standards.

2. Recreation Resource Objectives

- a. **Land and Water Accessibility** – Provide use areas and facilities that are accessible for all Project visitors.
- b. **Interpretive Services and Outreach Programs** – Interpretive services would focus on agency, District, and Project missions, benefits, and opportunities. Interpretive services at the Project will be used to enhance public safety through promoting public awareness, understanding and appreciation of the Project and its resources.
- c. **Recreation Optimization and Sustainability** – Utilize leveraged resources when possible to maintain and improve recreation facilities that reduce operations and maintenance costs while meeting public demand.
- d. **Quality Outdoor Recreation in Urban Settings (Intensive Use)** - Operate and maintain day-use facilities, as well as develop new facilities that meet public demand, to provide opportunities for multiple user groups in an urban setting.
- e. **Quality Outdoor Recreation in Rural Settings (Low Density Use)** Operate and maintain multi-purpose facilities, as well as develop new

facilities that meet public demand, to provide opportunities for multiple user groups in a rural setting.

3. Environmental Stewardship

a. Riparian and Wetland Protection – Protect and limit impacts to wetlands and riparian corridors on the Project in conjunction with Project missions, water quality, and fish and wildlife benefits.

b. Fish and Wildlife Habitat Management – Conserve, protect, restore, and/or enhance habitat and habitat components important to the survival and proliferation of threatened, endangered, special status, regionally important, and Lower Snake River Compensation Plan species and habitat on Project lands.

c. Cultural Resources Management – Carry out legal requirements of the National Historic Preservation Act (NHPA) in support of existing and ongoing work around Lower Granite Lock and Dam.

d. Integrated Pest Management – Minimize negative impacts to native flora and fauna and damage to Government facilities by reducing and/or eradicating invasive and nuisance species on Project lands.

e. Fire Management - Minimize the negative effects of wildfires, including impacts to Federal property and the recreating public.

Proposed MP Land Classifications

Project land classifications designate the primary use for which project lands are managed. Project lands are zoned for development and resource management consistent with authorized project purposes and the provisions of NEPA and other Federal laws. The Proposed MP would use EP 1130-2-550 land classification categories previously described in Section 2.1

- Project Operations.
- High Density Recreation
- Multiple Resource Management
 - Low Density Recreation
 - Wildlife Management
 - Vegetation Management
 - Recreation-Future Development
- Environmentally Sensitive Area

Resource Plan Recommendation

The Resource Plan for the Project describes in broad terms how the lands would be managed. The Proposed MP would divide Project lands into management areas within land classifications. The Project chose the Management by Area approach as set forth in EP 1130-2-550 to modify and combine some of the units. The management areas identified are presented in broad terms. A more descriptive plan for managing these lands can be found in the Lower Granite Lock and Dam Operational Management Plan (OMP). Management tasks described in the OMP must support the Resource Objectives, land classifications, and resource plan set forth in the Master Plan. Section 5 of the Proposed MP (Appendix A) contains detailed descriptions of the management areas by land classification.

The recommendations seek to improve operation and maintenance for recreational facilities for increased efficiency. Many site features, such as steep slopes and fluctuating water levels at the Project, make the operation and maintenance of recreational facilities expensive and time consuming. Creating more efficient recreational opportunities would help to ensure the continued success of public access and use at the Project.

The conceptual development guidelines presented in the Master Plan would authorize the Natural Resources staff to propose projects that address current problems and demands. The guidelines specifically consider types of recreational uses and facilities, including motorized access, boating, fishing, floating facilities and docks, marinas, boat launch ramps, camping, campsites, swimming, hiking, biking, and equestrian use. Other analysis includes visitation and future demands. Facilities design principles and criteria extracted from EM 1110-1-400, "Recreation Planning and Design Criteria" (Corps 2004), appropriate to the Project are provided and discussed. These include structures, utilities, landscaping, and other support items.

Proposed MP Recommendations

Design criteria for recreation areas and facilities would be updated with current engineering manuals, engineering regulations and engineering pamphlets. The conceptual development guidelines presented in the Proposed MP would authorize the Natural Resources staff to propose projects that address current problems and demands. Each proposed project would be evaluated for environmental compliance before it is implemented and based on proper approval, public desire and available funding.

The Proposed MP provides conceptual guidelines for the effective management of the Project. Guidelines were developed in accordance with the Corps master planning process. Preparation of the MP required: (1) an appraisal of the natural and human-related resource conditions of the Project and the surrounding region, and (2) an examination of environmental and administrative constraints and influences. Recommendations seek to improve operation and maintenance for increased efficiency. Efficient recreation and wildlife opportunities help to ensure the continued success of public access.

The MP is a living document establishing the basic direction for management and development of the Project in agreement with the capabilities of the resource and public needs. The MP is flexible in that supplementation can be achieved through a formal process that addresses unforeseen needs. The MP would be reviewed every five years to facilitate the evaluation and utilization of new information as it becomes available.

SECTION 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1 Introduction

This section describes the existing affected environment (existing condition of resources) and evaluates potential environmental effects on those resources for each alternative. Alternative 1 (No Action) and Alternative 2 (Proposed Master Plan or MP) were carried forward for analysis. This analysis is prepared at the broad scale planning level. The EA does not analyze site specific actions. Those actions would be identified in the Project OMP's and be evaluated under NEPA, tiering from this EA.

This section identifies and describes: (1) the affected environment – i.e. the Project recreation, natural and cultural resources which have the potential to affect or to be affected by the alternatives, and (2) what the effects on those resources might be with implementation of the alternatives. Although all existing resources within the Project area were initially considered, only those resources determined relevant to the proposed action were included in the affected environment evaluation. While the intent is to focus on relevant resources, it is important to recognize that the level of relevance of each identified resource to the proposed action is not the same.

The Proposed MP Alternative would comply with Corps policy in EP 1130-2-550, (Corps 2013), which recognizes particular qualities, characteristics, and potentials of the Project and provides consistency and compatibility with national objectives and other state and regional goals and programs. According to current Corps policy, funding for new recreational development, construction, consolidation or land use change would not be permitted without an approved MP that meets current requirements identified in the EP. Based on this requisite, the No Action Alternative would restrict any changes to operations and maintenance that require budget approval. Although short-term impacts may be minimal, long-term proposed actions for management changes would not be approved, possibly resulting in adverse impacts to natural and cultural resources and visitors. The No Action Alternative does not meet the Project Purpose and Need, but is carried forward in this analysis as required under CEQ, providing a basis for comparison with other alternatives.

The purposes of the Lower Granite Lock and Dam Project, as originally authorized, include navigation, hydroelectric power, incidental irrigation, with fish and wildlife, and recreation added later as additional purposes. Maintenance of equipment and use of structures for navigation, hydroelectric power, and irrigation are the highest focus. According to Corps policy, a MP does not include water management operations and associated prime facilities (dams, gates, locks, levees, etc.). Therefore impacts of navigation, hydroelectric power, and irrigation are not included in this assessment, which focuses on recreation and fish and wildlife values.

3.2 Environmental Review by Resource

The Proposed MP being analyzed in this EA does not include detailed actions for the Project. It is not feasible to define the exact nature of potential impacts prior to receiving proposals for specific development or management changes, such as construction of new facilities, roads, trails, or vegetation management at the broad, landscape-scale.

This section discusses the existing environmental conditions of the Project area, as well as general effects anticipated to occur for the proposed action, over a wide range of environmental and social elements. In addition, the No Action Alternative is evaluated, which provides a comparison to the proposed action. Resources that have been considered relevant in this analysis include: Aesthetics; Recreation; Socioeconomics; Aquatic Resources; Wildlife; Vegetation; Water Quality; Threatened and Endangered Species; Cultural Resources; Environmental Justice; Climate Change; and Cumulative Effects.

3.2.1 Aesthetics/Visual Quality

Bordered by grasslands, shrub-steppe, and agricultural crop lands which vary in appearance by season and crop rotation, the Project offers thousands of acres open for recreation adjacent to Lower Granite Lake. The Snake River flows through the Project and presents users the opportunity to view the river canyon and many native wildlife species. Recreational areas and habitat management units are present throughout the Project providing areas for both land and water-related activities, including hiking, boating, bike, or horse. Lower Granite Dam creates the reservoir on the Snake River, providing the observer with scenic views of the Snake River Canyon downstream from Hells Canyon.

The aesthetic quality of an area is a measure of the visitor's perception of how pleasing an area appears. Many people visit the Project because of its aesthetic value and visitors enjoy visual resources through a variety of landforms, wildlife, fisheries, recreation and vegetation. The deep river canyon provides dramatic backdrops to the reservoir and agricultural lands.

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action Alternative, visual resources on Project lands would evolve through natural process as vegetation matures, by changes occurring on adjacent lands within the view shed, or as a result of routine operation and maintenance activities performed by Project staff. Maintenance activities such as mowing, vegetation trimming, facility cleaning, facility repair, etc., would have minor or no adverse impacts to aesthetics.

The surrounding privately owned property is primarily used for agricultural purposes and municipal development in the Clarkston and Asotin,

Washington and Lewiston, Idaho areas. Based on past and current use, visual quality would likely remain constant in the near future. Long-term, aesthetic quality of adjacent property may be modified by alternate crops or changes in land use, such as construction of industrial buildings or housing. The influence of increasing human population in the region may modify views from the Project. Future development such as new roads, cell towers, wind turbines, or power line towers would adversely impact aesthetics.

Alternative 2 - Proposed MP. With the Proposed MP Alternative, potential impacts to aesthetics, influenced by project operation and maintenance, would be similar to the No Action Alternative. Implementation of Alternative 2 would utilize additional analysis to make improvements for maintenance and operations of natural, cultural and recreational resources. With long-term balanced planning, this alternative would be more effective in creating beneficial impacts for quality aesthetics by using enhanced vegetation management, facility development and visitor management. Visual quality from outside of project lands would not be impacted by adoption of Alternative 2.

3.2.2 Recreation

The Project provides a wide range of all-season recreational pursuits along the Snake River due to its close proximity to the cities of Lewiston, Idaho and Clarkston, Washington. While portions of the project provide users with an urban park atmosphere, much of the project is devoted to wild land or dispersed recreation pursuits such as hiking, picnicking, boating, biking, running, horseback riding, hunting, fishing, and nature study. Project levees, comprising eight miles around Lewiston, are popular all season recreation areas. Visitors use the area heavily for boating and fishing on Lower Granite Lake; walking, bicycling, and exercising on the 18.9 mile Clearwater-Snake River National Recreation Trail; and camping, picnicking, hunting, horseback riding, rock climbing, birding, and sightseeing throughout the Project. There were over 2.6 million visitors at the Project in 2016.

Boating on Lower Granite Lake is a primary activity for many visitors. Much of the boating is related to fishing; however, waterskiing, tubing, wake boarding, jet skiing, sailing, kayaking, and canoeing are also important boating activities. Access to the 48.7 mile long lake is gained through 12 well-spaced boat ramps, seven managed by the Corps, and five are managed by lessees through a real estate instrument. Additionally, two marinas with over 220 slips are operated by lessees in the upper reaches of the lake.

During the hot summer months, swimming is a popular activity. Swimming usually occurs at the lake's four designated swimming areas, but visitors also swim in undesignated areas adjacent to sandy beaches.

Fishing is another major water activity of visitors to Lower Granite Lake. Most anglers fish for steelhead, Chinook salmon, and smallmouth bass. Fishing for trout takes place at Corps ponds including Evans, Golf Course and Lewiston Levee ponds.

Many visitors to the Project camp at one of the nearly 300 camp sites. The Project offers a diversity of camping opportunities ranging from highly developed campsites with electricity, water, and sewer to primitive camping where the only amenities are a fire ring and table.

The Lower Granite Lock and Dam Project is an important resource for hunting. White-tailed and mule deer are the primary big game species. Upland game bird hunters target turkey, pheasant, chukar, and mourning dove. Waterfowl hunting is fairly common. Over 6,500 acres of Project lands are open to public hunting.

The Project provides more than 30 miles of land-based recreation trails. The largest trail system on Project lands is the paved Clearwater-Snake River National Recreation Trail. This urban trail system has two components:

- The Lewiston Levee Parkway runs atop the Lewiston Levees and connects recreation areas on the Idaho side of the river to the city of Lewiston, Idaho.
- The Greenbelt Trail connects recreation facilities on the Washington side of the river to the communities of Asotin and Clarkston, Washington.

Hells Gate contains nearly 13 miles of approved hiking trails with varying degrees of difficulty in the middle of the wildlife habitat area.

A large percentage of visitors to the Project each year come to sightsee and view the Snake River canyon. Sightseeing is often combined with picnicking, hiking, bird watching, wildlife photography, or other activities

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action Alternative recreation use would continue as in the past with predicted increasing visitation as local and regional populations grow. Short-term recreation in the Project area would continue with minor or no adverse impacts from routine operation and maintenance of facilities. Best Management Practices (BMPs) would be used to eliminate or significantly reduce adverse impacts for visitors from operation and maintenance actions. Long-term, increased use would deteriorate natural and manmade resources as carrying capacity is approached. Maintenance requirements would increase to sustain current resources.

Alternative 2 - Proposed MP. Potential impacts to recreation from Alternative 2 would be similar to the No Action Alternative over the short-term. The new MP would comply with current Corps guidance, and would provide analysis of use, demand, carrying capacity, and social effects of proposed actions from the predicted increased visitation. Using a long-

term balanced planning approach, Alternative 2 would be more effective in accommodating increased number of visitors and preserving natural resources. Recreation use and experience quality would be beneficially impacted by adoption of Alternative 2 over the long-term.

3.2.3 Socioeconomics

The Project located in southeastern Washington and north central Idaho, occupies portions of Asotin, Garfield, and Whitman counties in Washington, and Nez Perce County in Idaho. Lewiston, Idaho (2016 population estimate: 32,872) and Clarkston, Washington (2016 population estimate: 7341) are the two largest cities in the area. The cities comprise the Lewiston, ID-WA Metropolitan Statistical Area (MSA), with an estimated population of 61,476 as of July 1, 2011 (U.S. Census Bureau 2018). The cities of Lewiston and Clarkston are named after Meriwether Lewis and William Clark (of the Lewis and Clark expedition), respectively.

The MSA is the primary regional transportation, retail, health care, wholesale and professional services, and entertainment center. With the presence of Lewis–Clark State College in Lewiston, it is also a center for education and workforce training. The local economy has historically been driven by agriculture and manufacturing. The Ports of Lewiston and Clarkston are the terminus of a navigable waterway to the Pacific Ocean. They handle barge traffic carrying grain, wood products, and manufacturing goods.

The racial makeup of the MSA was 93.01 percent White, 0.25 percent African American, 3.88 percent Native American, 0.60 percent Asian, 0.06 percent Pacific Islander, 0.55 percent from other races, and 1.66 percent from two or more races. Hispanic or Latino of any race were 1.94 percent of the population. The median income for a household in the MSA was \$34,903, and the median income for a family was \$42,402. Males had a median income of \$35,249 versus \$24,616 for females. The per capita income for the MSA was \$18,146 (Wikipedia 2018).

Many recreational opportunities are found within the Project area. The cities of Lewiston and Clarkston provides public recreation facilities including parks, golf courses, swimming pools, and recreation trails. Other regional recreation include the National Park Service's Nez Perce National Historical Park, 8 miles east of Lewiston and recreation in the Umatilla National Forest, located southwest of Clarkston.

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action alternative there would be minor or no impacts to socioeconomics in the area surrounding the Project. Population growth and demographic makeup of the population would remain similar to rates and percentages the area experiences currently. Land values would not be affected if the No Action Alternative was implemented. Any changes in the socioeconomic conditions of the

area would likely be the result of outside influences and not those created by the No Action Alternative.

Impacts to socioeconomics within the Lewiston/Clarkston Valley from operation of the Project are related to utilization of the Project for recreational purposes. Composition of social groups at the Project appears to mimic the demographics of the region. This conclusion is based on three observations, 1) The Project is very near the urban population that accounts for much of the Project visitation; 2) there are no or minimal fees for use; and 3) there are no requirements for high-cost recreation equipment for many of the recreational opportunities provided by the Project. Visitors can utilize many of the Project facilities without disparity for economic considerations. With the No Action Alternative there would be minor or no adverse impacts to socioeconomics in Lewiston/Clarkston area or the surrounding counties from routine operation and maintenance of facilities, visitor use, or management of natural and cultural resources.

Alternative 2 - Proposed MP. With Alternative 2, potential impacts to socioeconomics in the surrounding counties from operation and maintenance of facilities, visitor use, or management of natural and cultural resources would be similar to the No Action Alternative. The Proposed MP would use contemporary analysis to consider if the Project is impacting socioeconomics or influencing socioeconomic factors in the use of the recreation facilities. Land values would not be affected if Alternative 2 would be implemented. Any changes in the socioeconomic conditions of the area would likely be the result of outside influences and not those created by the Proposed MP.

3.2.4 Aquatic Resources

The Snake River is home to 35 native fish species including both resident and anadromous species in the Project area. Lower Granite Lake has a combination of fish species common to both reservoir environments and rivers. Native, anadromous species include Chinook salmon (*Oncorhynchus tshawytscha*), sockeye salmon (*Oncorhynchus nerka*), and steelhead (*Oncorhynchus mykiss*), while native resident species include bull trout (*Salvelinus confluentus*), northern pikeminnow (*Ptychocheilus oregonensis*), chiselmouth (*Acrocheilus alutaceus*), white sturgeon (*Acipenser transmontanus*), and others. In addition, a variety of introduced fish species are present including largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), white crappie (*Pomoxis annularis*), black crappie (*Pomoxis nigromaculatus*), common carp (*Cyprinus carpio*), walleye (*Sander vitreus*), channel catfish (*Ictalurus punctatus*), lake trout (*Salvelinus namaycush*), and others.

Due to the proximity to the Snake River, there are a variety of aquatic/wetland habitats present in the Project area. Lower Granite Lake fluctuates between the minimum operating pool (MOP) level of elevation 733 feet and the ordinary high water mark

(OHWM) elevation of 738 feet. MOP is generally maintained between April 1 and September 1, with higher water levels, up to OHWM, maintained between September 1 and April 1. Due to the water level fluctuating up to five feet, aquatic habitats ranging from the shallow pool to uplands are present in the Project area.

Approximately 7.6 percent of the vegetated lands at the project are classified as wetlands. These wetlands are classified as Palustrine Emergent (0.6 percent of vegetated lands), Palustrine Scrub Shrub (2.8 percent of vegetated lands), and Palustrine Forest (4.3 percent of vegetated lands).

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action Alternative, impacts related to aquatic resources would remain unchanged. Resource management would continue as it has in recent years. The No Action Alternative would have no new direct effects on resident/anadromous fish and/or aquatic resources. Land uses would remain unchanged and management of the land and activities on the project would be conducted as it has in the past. Any ongoing impacts to fish and other aquatic organisms would occur primarily as a result of negative water quality impacts in the reservoir and streams.

Alternative 2 - Proposed MP. Under Alternative 2, potential impacts to aquatic resources from operation and maintenance of facilities, visitor use or management of natural and cultural resources would be similar to the No Action Alternative. Alternative 2 would have no new direct effects on resident fish and/or aquatic habitat. Under this alternative, the new MP would enable more efficient land management. The MP would comply with current Corps guidance, and would provide analysis of use, demand, carrying capacity, social effects of proposed actions. Future development would create positive effects, providing for sustainable use of reservoir resources and reduced long-term direct and indirect impacts to project resources. Effects from long-term, minor modifications to facilities or natural resources are likely under this alternative to better meet the needs of the recreating public and to better respond to resource objectives. With new construction, indirect, minor, short-term impacts would occur, but implementation of BMPs would minimize detrimental impacts.

3.2.5 Wildlife

The Project provides fish and wildlife habitat for over 250 species between Lewiston, Idaho, and Starbuck, Washington. Corps-managed HMUs provide public hunting and fishing opportunities, as well as access to view wildlife for educational, recreational, and aesthetic experiences.

Various forms of wildlife are generally abundant close to riparian habitats associated with HMUs along the Snake River and tributary streams. Many species of mammals, birds, amphibians, and reptiles inhabit riparian corridors during different parts of the year.

Mammals common to the area include white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), otter (*Lontra canadensis*), striped skunk (*Mephitis mephitis*), bats [silver-haired (*Lasioncycteris noctivagans*) and hoary (*Lasiurus cinereus*)], and a variety of small rodents [including deer mouse (*Peromyscus maniculatus*) and Montane vole (*Microtus montanus*)]. Occasionally, bobcat (*Lynx rufus*), black bear (*Ursus americanus*), cougar (*Puma concolor*), and moose (*Alces alces*) have been seen in the Project area.

Common birds include wild turkey (*Meleagris gallopavo*), belted kingfisher (*Megaceryle alcyon*), California quail (*Lophortyx californicus*), ring-necked pheasant (*Phasianus colchicus*), mourning doves (*Zenaidura macroura*), swallows (*Tachycineta* spp. and *Hirundo* spp.), sparrows (*Melospiza melodia*), woodpeckers (*Picoides* spp.), various other songbirds, ducks (*Anas* spp.), hawks (*Buteo* spp.), osprey (*Pandion haliaetus*), and owls [common barn owl (*Tyto alba*), western screech owl (*Otus kennicotti*), great horned owl (*Bubo virginianus*), snowy owl (*Nyctea scandiaca*), northern pygmy owl (*Glaucidium gnoma*), long-eared owl (*Asio otus*), and short-eared owl (*Asio flammeus*)]. Canada goose (*Branta canadensis*), Bald eagles (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), and American white pelicans (*Pelecanus erythrorhynchos*), can be seen along shorelines and riparian habitats.

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action Alternative, wildlife populations would evolve from the existing condition in a natural process as habitat changes, as influenced by operation of the Project, and as human use changes. There would be no adverse impacts to wildlife species from routine operation and maintenance of facilities, natural and cultural resources using appropriate BMPs. Adverse impacts to wildlife would occur with increased human presence in some locations. The forecasted increase in visitation would adversely impact wildlife and associated habitat in some locations. Wildlife would likely move to alternative habitat areas.

Alternative 2 - Proposed MP. Under Alternative 2, potential impacts to wildlife resources from operation and maintenance of facilities, visitor use, or management of natural and cultural resources would be similar to the No Action Alternative. The Proposed MP would comply with new Corps guidance, and would provide analysis of use, demand, carrying capacity, environmental and social effects of proposed actions. Utilizing the guidance and updated analysis would assist in sustaining the long-term natural ecosystem process for many habitats and protecting regional populations of wildlife species that use and/or require the habitat

characteristics associated with Project lands. Planning under Alternative 2 would be expected to achieve habitat and animal health by meeting management objectives and would provide long-term enhancement of wildlife populations. The increase of almost 1,000 acres of Multiple Resource Management-Wildlife Management Land Classification areas would provide opportunities for continued wildlife habitat enhancement actions across the Project.

3.2.6 Vegetation

Major vegetation zones in the general region include grasslands and shrub-steppe in the lower to mid-elevations, forest in mid to higher elevations, and alpine meadows in the highest elevations. The Project area is located primarily in the grassland/shrub-steppe zone as it occurs in low elevations adjacent to the Snake River.

Three vegetation broad categories are found within the Project: terrestrial, riparian, and wetland. Terrestrial vegetation is dominated by the grass/forb cover type (85 percent of Project area), with lesser amounts of shrub-steppe and upland forest cover types. Riparian and wetland vegetation comprise the remainder of the vegetation cover types, occurring generally in linear bands along the reservoir shoreline and streambanks.

Presently, approximately 60 percent of the Project is classified as mitigation and Environmentally Sensitive Areas mainly consisting of grassland and shrub-steppe. Habitat management has focused on grassland enhancement and vegetation diversity, including efforts to increase riparian habitat through the planting of shrubs and trees to compensate for habitat lost after dam construction. A wildlife contract has been in place for over 20 years to control noxious weeds, manage native grasses, plant wildlife food plots, and plant native trees and shrubs. Acreages for these management activities has varied over the years, but is prioritized by Corps wildlife biologists.

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action Alternative, vegetation management would continue as currently operated. Vegetation would change as growth occurs naturally over time, along with vegetation plantings. There would be minor impacts to vegetation from routine operation and maintenance, including treatments of invasive plant species. Maintenance of facilities and infrastructure would require trimming or removal of vegetation. Other vegetation would be managed for storm damage, disease, or modifications of wildlife habitat as required for targeted wildlife species. Land and water uses would remain unchanged and management of the land and activities on the project would be conducted as it has in the past.

Alternative 2 - Proposed MP. Under Alternative 2, potential effects to vegetation from project operation and maintenance and visitor use would

be similar to No Action Alternative. Implementation of the Proposed MP would utilize additional analysis to make changes for anticipated impacts from increased visitation and influences from outside of the Project.

Alternative 2 would have no new direct effects on vegetation management. Implementing the guidance and updated analysis would assist in sustaining the natural ecosystem process for many habitats and protecting regional populations of the sensitive wildlife species that use and/or require the habitat characteristics associated with Project lands, particularly riparian and wetland vegetation cover types. Using long-term balanced planning, this alternative would be more effective in enhancing vegetation for wildlife resources.

3.2.7 Water Quality

Overall water quality was summarized in the Biological Evaluation (Appendix A) in terms of six criteria for the Project: 1) water quality, 2) habitat access, 3) habitat elements, 4) channel condition and dynamics, 5) flow and hydrology, and 6) watershed conditions. Environmental baseline conditions were evaluated as: 1) properly functioning, 2) at risk, or 3) not properly functioning.

Water quality, evaluated based on temperature, sediment, and chemical contaminants/nutrients, is considered “at risk.” Temperature is generally high in the summer months, though it is moderated by cold water releases from Dworshak Dam. Sediment deposition and transport on the Snake River experiences great fluctuations between high and low flow periods. Chemical contamination/nutrients are sometimes high due to agricultural runoff.

Habitat access, evaluated based on physical barriers, is considered “at risk.” The lower Snake River dams provide fish passage, but some migrants are delayed or killed.

Habitat elements, evaluated based on substrate, large woody debris, pool frequency, pool quality, off-channel habitat, and refugia, are considered “at risk” to “not properly functioning.” Substrate is impacted by the deposition of sand and silt in some areas of the Snake River, and very little large woody debris is deposited, resulting in “not properly functioning” conditions. Pool frequency and pool quality are both “at risk” due to alterations caused by the lower Snake River dams. Off-channel habitat is “not properly functioning” because little to no off channel habitats exist along the lower Snake River. Refugia is “at risk” because sources of materials such as large woody debris are limited in the Snake River.

Channel conditions and dynamics, evaluated based on width to depth ratio, streambank condition, and floodplain connectivity, are considered “at risk” to “not properly functioning.” The width to depth ratio is “not properly functioning” due to the existing reservoir being much deeper and wider than the pre-impoundment Snake River. Streambank condition is “at risk” as only a narrow band of riparian vegetation

exists along the Snake River as the natural floodplain was inundated by Lower Granite Lake. Floodplain connectivity is “not properly functioning” as reservoir levels are controlled by dam operations and levees were constructed to restrict access river access to the floodplain.

Flow and hydrology, evaluated based on peak/base flows and drainage network increase, are considered “at risk” to “not properly functioning.” Peak/base flows are “not properly functioning” since the river is somewhat controlled by Hells Canyon Dam on the Snake River and Dworshak Dam on the North Fork Clearwater River. Drainage network is “at risk” as urban development, with many impervious surfaces, has increased local runoff in many areas along the Snake River.

Watershed conditions, evaluated based on road density and location, disturbance history, and riparian reserves, are considered “at risk.” Road density and location is “at risk” as road networks have expanded greatly within the Snake River Basin within the past century, contributing to sediment into streams and rivers. Disturbance history is “at risk” as large wildfires have increased in frequency throughout the Inland Northwest resulting in increased potential sediment delivery to streams. Riparian reserves are “at risk” due to the absence of vegetation along shorelines, or only a narrow band.

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action alternative impacts related to water quality from operation of recreation and wildlife lands at the Project would remain unchanged. Water quality would remain at risk due to temperature impacts, sediment, reduced riparian vegetation, etc. Management of the land and operational activities on the Projects would be conducted as it has in the past. Development outside of the Project for new housing, industrial use, or changes in farming practices and wildfire frequency/severity could potentially adversely impact water quality.

Alternative 2 - Proposed MP. Under Alternative 2, potential impacts to water quality from operation and maintenance of facilities, visitor use or management of natural and cultural resources would be similar to the No Action Alternative. Water quality impacts from specific recreation and environmental maintenance actions would be minor and short term. The Proposed MP would comply with new Corps of Engineers guidance, and would provide analysis of use, demand, and carrying capacity. Implementing the MP guidance and updated analysis would assist in sustaining the natural ecosystem process to protect water quality.

The proposed reclassification of portions of Alpowa, Asotin Creek, and Knoxway Canyon HMUs from land classification units currently allowing various forms of development, to Environmentally Sensitive Area land classification units, which are managed to protect scientific, ecological, cultural, or aesthetic features, is intended to provide additional, long-term

protection benefits to these areas. This reclassification would help protect these areas as required mitigation for the Section 401 Certification granted by the State of Washington Department of Ecology associated with the Swallows Beach Restoration Project.

3.2.8 Threatened and Endangered Species

There are seven species listed under ESA in the Project area. These include: Snake River spring/summer and fall Chinook (*Oncorhynchus tshawytscha*), Snake River Sockeye (*Oncorhynchus nerka*), Snake River Steelhead (*Oncorhynchus mykiss*), Bull Trout (*Salvelinus confluentus*), Spalding's catchfly (*Silene spaldingii*), and Yellow-billed cuckoo (*Coccyzus americanus*). The lower Snake River and its tributaries within the Project area contain designated critical habitat for all ESA-listed fishes.

- **Snake River Spring/Summer Chinook Salmon**

Snake River spring/summer Chinook salmon were listed as threatened on 1992, and include all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, Salmon, and mainstem Snake Rivers. Adult and juvenile spring/summer Chinook salmon generally only migrate through the Project area. A number of limiting factors, including degraded freshwater spawning and rearing habitat, the hydropower system, and harvest, affect these populations.

- **Snake River Fall Chinook Salmon**

Snake River fall Chinook salmon were listed as threatened on June 28, 2005 and reaffirmed April 14, 2014 (79 Federal Register 20802). Historically, the lower and middle Snake River populations formed the two major population groups, however, the construction of Hells Canyon Dam extirpated the middle Snake River population. Spawning populations presently occur in the mainstem Snake River below Hells Canyon Dam, Lower Granite Dam, and in the lower reaches of the Clearwater, Grand Ronde, Tucannon, Salmon, and Imnaha Rivers. Fall Chinook salmon migrate through the Project area, but reservoir type fall Chinook smolts likely rear in the lower Snake River within the Project area, and a small population of adults typically spawn in the Snake River below Lower Granite Dam.

- **Snake River Sockeye Salmon**

Snake River sockeye salmon were listed as endangered on November 20, 1991. Sockeye generally only migrate through the Project area, but adults have been known to hold up below Lower Granite Dam in the summer when high water temperature impedes migration. Sockeye may also seek thermal refuge in the Clearwater River upstream of the Snake River confluence.

- **Snake River Steelhead**

Snake River steelhead were listed as threatened on August 18, 1997, and protective regulations were issued under section 4(d) of the Endangered Species Act on July 10, 2000. Their threatened status was reaffirmed on January 5, 2006, and again on April 14, 2014. This distinct population segment includes populations below natural and manmade impassable barriers in streams in the Snake River basin of southeast Washington, northeast Oregon, and Idaho. Steelhead typically migrate through the Project area, but may also seek thermal refuge in the Clearwater River upstream of the Snake River confluence in summer, and overwinter in the Lower Granite Dam pool prior to completing their spawning migration.

- **Bull Trout**

The United States Fish and Wildlife Services (USFWS) issued a final rule listing the Columbia River Basin population of bull trout as a threatened species on June 10, 1998. Bull trout are currently listed throughout their range in the western United States as a threatened species. Historically, bull trout were found in about 60 percent of the Columbia River Basin. They now occur in less than half of their historic range. Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada (USFWS 2014). The lower Snake River within the Project area has one major stronghold bull trout population in Asotin Creek, which consists of six tributaries. Asotin Creek offers the only bull trout refugia with suitable spawning and rearing habitat in the Project area (USFWS 2014). Bull trout persistence in this basin is important for maintaining connectivity between populations in the upper Snake River Basin and the Columbia River. Both sub-adult and adult bull trout likely use the lower Snake River during the fall, winter, and spring for rearing and overwintering, although the proportion of local populations that may do this is unknown.

- **Spalding's Catchfly**

Spalding's Catchfly was listed as threatened on October 10, 2001. This plant is found predominantly in grasslands and sagebrush-steppe. Its current range extends through northeast Oregon, western Idaho, and southeast Washington, encompassing the Project area. To date, no Spalding's catchfly have been documented on Project lands (Trumbo 2018).

- **Western Yellow-Billed Cuckoo**

The yellow-billed cuckoo was listed as threatened on October 3, 2014. Critical habitat was also proposed for designation at that time, but not in Washington. In the Pacific Northwest, the species was fairly common in willow bottoms along the Willamette and Columbia Rivers in Oregon, and in the Puget Sound lowlands and along the lower Columbia River in Washington, but was rare east of the Cascade Mountains in these states.

- **Environmental Consequences**

Alternative 1 – No Action. Considering impacts to Endangered Species includes fish, wildlife, and plant impacts. Land and water uses would remain unchanged and management of the land and activities at the Project would be conducted as in the past. Under the No Action Alternative there would be no direct effect on ESA-listed species. The existing land classifications, resource objectives, and management actions would not change.

Alternative 2 - Proposed MP. Under Alternative 2, potential effects to threatened and endangered species from Project operation and maintenance and visitor use would be similar to the No Action Alternative. Necessary protection actions would be fulfilled pursuant to ESA and other associated regulations and executive orders. The Corps has determined that the Proposed MP, may affect, but is not likely to adversely affect any associated ESA-listed species. The proposed action may affect, but is not likely to adversely affect critical habitat for ESA-listed fishes, and would have no effect on yellow-billed cuckoo critical habitat.

The Corps determination of not likely to adversely affect listed species or designated critical habitat was based solely on the premise that changes in land use classifications that provide restrictions on future development of those lands would be purely beneficial. For example, the proposed reclassification of portions of Alpowa, Asotin Creek, and Knoxway Canyon HMUs from land classification units currently allowing various forms of development, to Environmentally Sensitive Area land classification units, which are managed to protect scientific, ecological, cultural, or aesthetic features, is intended to provide additional, long-term protection benefits to these areas.

Master plans are not intended to authorize or specify site-specific management actions. As stated in Engineer Pamphlet 1130-2-550, Section 3-2, "The MP deals in concepts, not in details of design or administration. Detailed management and administration functions are addressed in the Operational Management Plan (OMP), which implements the concepts of the MP into operational actions." Therefore, adoption of the MP under a "no effect" finding would also be supportable.

3.2.9 Cultural Resources

There is ample evidence that Nez Perce and Palus people have lived along the Snake and Clearwater Rivers in the Project area for thousands of years. These areas not only represent long ago activities, they are still of living importance today to affiliated Tribes. A number of historic period sites are also present, including those related to agriculture, transportation, industry, and homesteads. An overview and historic context for Lower Granite and other dams in the Federal Columbia River Power System (FCRPS) is

discussed in a number of documents and will not be repeated here (Historical Resource Associates, Inc. 2015, Reid 1995).

Formal ethnographic studies by researchers with the Nez Perce, Palus, and other tribes began in the late 1800s and early 1900s, but the first documented archaeological survey of Corps lands at Lower Granite Lock and Dam was the Smithsonian Institute's River Basin Surveys in 1948. Twelve archaeological sites were recorded during that initial survey, with additional surveys, salvage excavations, and ethnographic studies conducted by archaeologists from Washington State University and the University of Idaho up to the time of reservoir impoundment (Osborne 1948). At the time of publication of the original Lower Granite Master Plan in 1974, the Corps, its contractors, and local universities had just completed excavations at a number of significant sites including Wawawai, Alpowa, Silcott, and Granite Point (Adams et al 1975, Brauner 1976, Leonhardy 1969, Yent 1976). In addition to those excavations, about two dozen Nez Perce burial sites were tested, and hundreds of graves were relocated by University and Tribal crews (Sprague 1978). The Corps also relocated several historical Euroamerican cemeteries prior to inundation (Schalk and Nelson 2016).

To date, 159 archaeological sites have been documented on Corps lands at the Project. Three of those sites, Hasotino, Hatwai, and Interior Grain Tramway, have been listed on the National Register of Historic Places (NRHP). One of those sites, Hasotino, is managed by the Corps, but is also a contributing site to Nez Perce National Historical Park.

Another ten archaeological sites have been found eligible through concurrence determinations with the State Historic Preservation Officer (SHPO), but have not been formally nominated to the NRHP. Eight archaeological sites have been found not eligible for the NRHP through concurrence determinations, and 138 sites are unevaluated. Ninety of the unevaluated sites are inundated, and have not been evaluated because limited information is available whether the site retains attributes that make it eligible for the NRHP.

Traditional Cultural Properties have been identified at Lower Granite Lock and Dam by the Confederated Tribes of the Colville Indian Reservation, the Nez Perce Tribe, and the Confederated Tribes and Bands of the Yakama Nation. These properties are in the process of being evaluated for NRHP eligibility.

Two buildings at Chief Timothy Park have been documented that are over 50 years old, and have been recommended not eligible for the NRHP. The Corps needs to complete concurrence determinations with the Washington SHPO before formally determining their eligibility status. One structure on the Idaho side has been found not eligible through a concurrence determination with the Idaho SHPO. One object, the Washington-Idaho Territorial Marker, has been documented, and it is currently unevaluated.

Sites at Lower Granite Reservoir have been affected by reservoir related effects, including erosion, sediment deposition, development, and recreational activities. Sites

have also been or could be affected by unauthorized actions, such as vandalism, looting, and cattle encroachments.

- **Environmental Consequences**

Alternative 1 – No Action. Under the No Action Alternative, there would be no changes to any process affecting cultural resource protection, and there would be no adverse impacts to cultural resources. The Corps would continue to review individual undertakings, and consult with the Idaho and Washington SHPO and affiliated Tribes in accordance with the 2009 FCRPS Programmatic Agreement.

Alternative 2 - Proposed MP. Under Alternative 2, potential effects to cultural resources from project operation and maintenance and visitor use would be similar to the no Action Alternative. The Corps determined that the adoption and implementation of the Master Plan would have “No Effect” on historic properties, in accordance with Section 106 of the National Historic Preservation Act. The Corps would continue to review individual undertakings, and consult with the Idaho and Washington SHPO and affiliated Tribes in accordance with the 2009 FCRPS Programmatic Agreement.

3.2.10 Environmental Justice

Federal agencies are required to consider and minimize potential impacts to subsistence, low income, or minority communities. The goal is to ensure that no person or group of people shoulder a disproportionate share of negative environmental impacts resulting from the execution of the country’s domestic and foreign policy programs.

- **Environmental Consequences**

Alternative 1 – No Action. The Project is located on Corps managed property and requires limited or no fees for entrance or use of the facilities or natural resources. The existing MP does not direct actions that would impact specific subsistence, low income, or minority communities.

Alternative 2 - Proposed MP. Under alternative 2, potential effects to environmental justice from project operation and maintenance and visitor use would be similar to No Action Alternative. The Proposed MP would not direct specific actions that would cause a disproportionate share of negative environmental impacts to a person or group of people.

3.2.11 Climate Change

Indications are that average global atmospheric temperatures are trending upward over the previous several decades, and are correlated to increased atmospheric carbon dioxide levels (NASA 2018). Internal combustion engines emit carbon dioxide (CO₂) as one byproduct of efficient burning of fuel (gasoline or diesel). International efforts are being directed at reducing carbon release into the atmosphere.

In the Pacific Northwest, changes in snowpack, stream flows and forest cover are already occurring. Future climate change would likely continue to influence these changes. Average annual temperature in the region is projected to increase by 3-10 F by the end of the century. Winter precipitation in the form of rain, not snow, is projected to increase while summer precipitation is projected to decrease (EPA 2018).

Reduced precipitation during the summer months would impact vegetation type and quantity, resulting in changes to wildlife habitat, including food sources, cover vegetation, and possibly reproduction areas. Higher temperatures would increase evaporation rates from the lake, lowering lake elevations, and increasing water temperature, impacting aquatic flora and fauna. Along with rising air temperatures, there would be a corresponding rise in stream temperature. This would likely reduce the quality and suitability of steelhead and bull trout habitat in the Project area. Some vegetation throughout the project would exhibit stress response to higher temperature and less precipitation.

- **Environmental Consequences**

Alternative 1 – No Action. There would no effects to climate change as a result of implementing the No Action Alternative. Gradual climate change would continue, in correlation with increasing CO₂ emissions worldwide. However, climate change would have the capability to cause minor effects to the Project with the potential existing for a change in weather patterns such as more rain and less snow in the winter.

Alternative 2 - Proposed MP. With adoption of Alternative 2, potential effects to climate change and from climate change would be similar to the No Action Alternative.

3.2.12 Cumulative Effects

The National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing the Act require federal agencies to consider the cumulative impacts of their actions. Cumulative effects are defined as, “the impact on the environment which results from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR § 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. The primary goal of a cumulative

effects analysis is to determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and reasonably foreseeable future actions.

3.3.12.1 Resources Considered

The Corps used the technical analysis conducted in this EA to identify and focus on cumulative effects that are “truly meaningful” in terms of local and regional importance. While the EA addresses the effects of alternatives on the range of resources representative of the human and natural environment, not all of those resources need to be included in the cumulative effects analysis – just those that are relevant to the decision to be made on the proposed action. The Corps has identified the following resources that are notable for their importance to the area and potential for cumulative effects. Those resources are:

- Recreation
- Wildlife

Resources are discussed in terms of their cumulative effect boundary (spatial and temporal), the historic condition and impacts to the resources, present condition and impacts to the resources, reasonably foreseeable future actions that may affect the resources, and the effects to the resource by the MP alternatives when added to other past, present, and future actions.

This section evaluates the cumulative effects of actions that could potentially affect the same environmental resources as those discussed earlier in this EA. The scope of this analysis extends beyond the Project to other areas that sustain the resources of concern. A resource may be differentially impacted in both time and space. The implication of those impacts depends on the characteristics of the resource, the magnitude and scale of the project’s impacts, and the environmental setting (EPA 1999).

3.3.12.2 Geographic and Temporal Scope of Cumulative Effects Analysis

Guidance for setting appropriate boundaries for a cumulative effect analysis is available from CEQ (CEQ 1997) and EPA (EPA 1999). Generally, the scope of cumulative effects analysis should be broader than the scope of analysis used in assessing direct or indirect effects. “Geographic boundaries and time periods used in cumulative impact analysis should be based on all resources of concern and all of the actions that may contribute, along with the project effects, to cumulative impacts” (EPA, 1999). The analysis should delineate appropriate geographic areas including natural ecological boundaries, whenever possible, and should evaluate the time period of the project’s effects.

The resources assessed have experienced various impacts since approximately 1960, when dam construction was contemplated. Actions such as construction and operations of dams and associated levee systems, agricultural development, road

building, development of cities and urbanization have negatively and positively impacted resources.

Discussed below are the past, present, and reasonably foreseeable future actions that were considered for the cumulative effects analysis, the effects of the actions on the resources assessed, and a summary of the cumulative effects of the alternatives. Table 3-1 summarizes the geographic and temporal boundaries used in this cumulative effects analysis.

Table 3-1: Geographic and Temporal Boundaries of Cumulative Effects Area

Resource	Geographic Boundary	Temporal Boundary
Recreation	Upstream from Lower Granite Dam along the Snake and Clearwater Rivers	50 years
Wildlife		

The geographic boundary for the cumulative effects analysis for Recreation and Wildlife includes actions taking place along the Snake and Clearwater Rivers upstream from Lower Granite Lock and Dam. The timeframe of 50 years was identified based on an approximate construction start of the Project in 1970. For reasonably foreseeable actions, a timeframe of five years into the future has been considered. Only actions that are reasonably foreseeable are included. To be reasonably foreseeable, there must be a strong indication that an action/event will occur or be conducted.

3.3.12.3 Past, Present, and Reasonably Foreseeable Future Actions and Implications for Resources

The following sections present summaries of past, present, and reasonably foreseeable future actions considered in this cumulative effects analysis, and the effects of those actions on the resources considered.

3.3.12.3.1 Past Actions

Most past actions were related to the Corps construction of Lower Granite Lock and Dam and associated facilities in the 1970s. The construction of the dam resulted in Lower Granite Lake being formed with slack water extending up the Snake River upstream of Clarkston, Washington. A variety of recreational sites were created at that time. Additional recreational sites have resulted from lease agreements with state agencies such as the Idaho Department of Parks and Recreation at Hells Gate State Park, and other entities including the cities of Lewiston, Idaho and Clarkston and Asotin, Washington.

Recreational development in local municipalities has occurred concurrent with increases in

population. Park development and improvements, development of walking trails, and other facilities have occurred. The Asotin County Aquatic Center was opened in 2004. Maintenance/upgrades of other recreational facilities were needed as sites were used including the replacement of the retaining wall at Chestnut Beach in 2017.

Lands were acquired by the Corps as part of the Lower Snake River Fish and Wildlife Compensation Plan to mitigate for impacts associated with loss of fish and wildlife habitat from the construction of Lower Granite Lock and Dam. A total of 54 habitat management units were developed along the Snake River, including Lower Granite Lake. Vegetation plantings have been conducted up to the present time to develop and improve wildlife habitat on Corps lands.

3.3.12.3.2 Effects of Past Actions on Resources

Wildlife

Loss of wildlife habitat associated with the construction of Lower Granite Lock and Dam and the subsequent filling of Lower Granite Lake was the main wildlife impact in the project area in the past. Habitat studies were conducted to determine the extent of impacts to wildlife habitat. The Lower Snake River Fish and Wildlife Compensation Plan was developed to mitigate for those impacts. Tree removal and shoreline work related to construction and maintenance of recreational facilities impacted riparian wildlife habitat.

Recreation

Recreational opportunities dramatically increased with the creation of Lower Granite Lake. Recreational facilities offering day-use opportunities, picnicking, hiking, boating, camping, hunting, wildlife viewing and many other activities were developed. Over time, some facilities required increased maintenance to remain operational. Boat marinas and swimming beaches experienced significant sedimentation and required dredging to remove accumulated sediments.

3.3.12.3.3 Present Actions

Present actions include regular operation and maintenance activities at other Corps recreational facilities. Specific Corps present actions include the development of a fishing platform at Golf Course Pond, replacement of a recreation shelter at Swallows Park, and ongoing vegetation plantings at Project HMUs and other locations as actions associated with the Lower Snake River Fish and Wildlife Compensation Plan are completed. The regular treatment of invasive plants at locations identified is occurring under the provisions of the District Programmatic Pest Management Plan (Corps 2013a).

3.3.12.3.4 Effects of Present Actions on Resources

Wildlife

Vegetation plantings and treatments of invasive plants would continue to improve wildlife habitat in the Project area. Riparian plantings of willows (*Salix sp.*), black cottonwood (*Populus trichocarpa*), and other species would create habitat for birds, mammals, reptiles, and amphibians creating shoreline conditions similar to what existed before the construction of Lower Granite Lock and Dam.

Adoption of the proposed Lower Granite Lock and Dam Master Plan would continue the emphasis of wildlife habitat mitigation developed in the Lower Snake River Fish and Wildlife Compensation Plan.

Recreation

Adoption of the proposed Lower Granite Lock and Dam Master Plan would guide the comprehensive management and development of all Project recreation, natural and cultural resources into the future. The Proposed MP would promote stewardship and sustainability of Project resources. Recreation use has increased from 1,630,936 in 1994 to 2,300,000 visits in 2015.

3.3.12.3.5 Reasonably Foreseeable Future Actions

Future actions in the Project area include continuing operation and maintenance of Corps facilities and the following proposed actions:

- Restoration of the beach access area at Swallows Park. The original pool area would be filled in and a new beach would be established nearby. Native vegetation (grasses, shrubs, trees) would be established at the previous pool site.
- Mitigation requirements associated with the Swallows Beach Restoration Project by the Washington Department of Ecology would establish three Environmentally Sensitive Areas in the Alpowa, Asotin, and Knoxway Canyon locations providing long-term protection benefits to these areas.
- Construction of a recreational fishing platform at Evans Pond would occur.
- Dredging of recreational boat marinas.
- Continued planting of native vegetation at HMUs and other Project locations for wildlife habitat and recreational values.
- Management of recreation sites for diverse public wants and evolving desires.

Commercial and residential development within and surrounding the cities of Clarkston and Lewiston would likely continue into the future. Recreation programs in both cities would continue to expand as population increases. Coordination between the cities, Corps, and other entities would likely continue and would increase as area population increases.

3.3.12.3.6 Effects of Reasonably Foreseeable Future Actions on Resources

Wildlife

Reasonably foreseeable future actions within the Project area would generally have beneficial impacts on wildlife in the area. Habitat would continue to be managed for multiple wildlife species, particularly in riparian and shoreline locations. The proposed reclassification to three Environmentally Sensitive Areas at Alpowa, Asotin Creek, and Knoxway HMUs would provide long-term protection which would benefit wildlife. The development and use of parks in Lewiston and Clarkston would have negligible impacts on wildlife, though vegetation plantings would have positive impacts. Added visitation at these sites, as the area population grows, may adversely impact certain wildlife species.

Impacts from Lower Snake River Fish and Wildlife Compensation Plan vegetation plantings would continue providing positive impacts to wildlife as vegetation grows, creating more vertical structure and habitat diversity. Additional vegetation planting would provide similar benefits.

Recreation

Parks and golf courses in both cities would continue to be used and managed at existing conditions for the reasonably foreseeable future. Future population growth would occur, requiring additional recreation facilities. The restoration of the beach access area at Swallows Park may increase public use of the park and nearby recreational facilities.

Increased visitation at the Project would require management to prevent user conflicts where there are physical limitations based on total recreation lands available. Increased use at city parks would set in motion redistribution of users to Corps facilities and other recreation lands in and around the Project area.

3.3.12.4 Summary of Cumulative Effects of Past, Present, and Reasonably Foreseeable Future Actions on Resources

Wildlife

Generally, wildlife populations have remained at stable, to increasing, levels during the past twenty years within the Project boundary. Impacts caused by new housing construction and increased human occupation in the cities of Lewiston and Clarkston and surrounding areas, generate adverse and beneficial impacts to a variety of wildlife species. As human population grows in the area and development increases to support the human population, some wildlife species would be displaced.

Adoption of the Proposed MP would not significantly contribute to the potential for ongoing adverse impacts to wildlife as human population increases in the Lewiston/Clarkston area. The surrounding land base would support stable to

increasing levels of most wildlife species. Based on MP objectives, future management would effectively improve wildlife habitat conditions, including food, cover, and reproduction. The Proposed MP, when combined with past, present, and reasonable foreseeable future actions would not be expected to have a significant detrimental effect on wildlife, and would, in many cases, have positive impacts.

Recreation

Increasing human population and available recreational opportunities would continue to drive impacts to recreation in the reasonably foreseeable future. Recreational demand would continue to grow as the regional population increases. City parks, golf courses, beaches/pool facilities, marinas, walking trails, picnic, and camping areas would be fully utilized. Impacts to other recreation lands in the area, such as the Nez Perce Historic site, would be negligible. It is anticipated that public use at the Project would increase in the future, but adverse impacts would be negligible.

Implementation of the Proposed MP at the Project would not significantly contribute to detrimental cumulative effects to recreation. Recreation needs of the public at the Project would be better accommodated through the implementation of the Proposed MP. Future recommendations would be based on review of existing facilities, resource suitability and carrying capacity, environmental and social effects. There would be modernization and upgrading of existing facilities and improved management of natural resources. The Proposed MP, when combined with past, present, and reasonable foreseeable future actions would not be expected to have a significant detrimental effect on recreation, and would, in many cases, have positive impacts.

SECTION 4– COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REVIEW REQUIREMENTS

Section 4 identifies the legal, policy, and regulatory requirements that could affect each proposed alternative. The MP will not, when adopted, authorize any new site specific actions. Those will be identified in future 5-year OMPs, which may require tiered NEPA review. The following paragraphs address the principal environmental review and consultation requirements applicable to the Proposed MP. Pertinent Federal treaties, statutes, and executive orders (EO) are included.

4.1 Treaties and Native American Tribes

Treaties between the United States and regional mid-Columbia/lower Snake River tribes document agreements reached between the federal government and the tribes. In exchange for Native American tribes ceding much of their ancestral land, the government established reservation lands and guaranteed that it would respect the treaty rights, including fishing and hunting rights. These treaties, as well as statutes, regulations, and national policy statements originating from the executive branch of the federal government provide direction to federal agencies on how to formulate relations with Native American tribes and people. Treaties with area tribes (e.g. Treaty of June 9, 1855, Walla Walla, Cayuse, etc., 12 Stat. 945 (1859)) explicitly reserved unto the tribes certain rights, including the exclusive right to take fish in streams running through or bordering reservations, the right to take fish at all usual and accustomed places in common with citizens of the territory, and the right of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed lands. These reserved rights include the right to fish within identified geographical areas.

Adoption of the Proposed MP would have no adverse impacts on important treaty resources.

4.2 Federal Statutes

- **National Environmental Policy Act (NEPA)**

As required by NEPA and subsequent implementing regulations promulgated by the Council on Environmental Quality, this EA was prepared in order to determine whether the proposed action constitutes a "...major Federal action significantly affecting the quality of the human environment..." and whether an EIS is required. This EA documents the evaluation and consideration of potential environmental effects associated with the proposed action.

This EA has been prepared and was circulated to agencies, tribes, and the public for review and comment pursuant to requirements of NEPA. No impacts significantly affecting the quality of the human environment have been identified at this time. No such impacts were identified during the public

review process, and compliance with NEPA would be achieved upon the signing of a FONSI.

The adoption of the Proposed MP would be in compliance with this Act. Subsequent implementing plans would be subject to further tiered review under NEPA.

- **The Endangered Species Act (ESA)**

The ESA established a national program for the conservation of threatened and endangered fish, wildlife, and plants and the habitat upon which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with the USFWS and National Marine Fisheries Service (NMFS), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their critical habitats.

Section 7 of the ESA and the Federal regulations on endangered species coordination (50 CFR §402.12) require that Federal agencies prepare a Biological Assessment that analyzes the potential effects of major actions on listed species and critical habitat. The Corps sent copies of a Biological Evaluation (Appendix A), documenting the Corps determination that adoption of the proposed MP is not likely to adversely affect listed species or designated critical habitat, to the USFWS and NMFS on March 16, 2018 for their review and concurrence. The Corps provided an amended BE to both agencies on June 13, 2018, based on input received. The Corps expects to receive written concurrence from NMFS and USFWS in the near future, which will be added to the MP Administrative Record.

The Corps determination of not likely to adversely affect listed species or designated critical habitat was based solely on the premise that changes in land use classifications that provide restrictions on future development of those lands would be purely beneficial. For example, the proposed reclassification of portions of Alpowa, Asotin Creek, and Knoxway Canyon HMUs from land classification units currently allowing various forms of development, to Environmentally Sensitive Area land classification units, which are managed to protect scientific, ecological, cultural, or aesthetic features, is intended to provide additional, long-term protection benefits to these areas. This reclassification would also help protect these areas as required mitigation for the Clean Water Act, Section 401 Certification granted by the State of Washington Department of Ecology associated with the Swallows Beach Restoration Project.

Such beneficial effects realized from precluding development are speculative at this point (i.e. not reasonably likely to occur), as no development or other deleterious actions are being proposed in wildlife or mitigation lands. Furthermore, master plans are not intended to authorize or specify site-

specific management actions. As stated in Engineer Pamphlet 1130-2-550, Section 3-2, "The MP deals in concepts, not in details of design or administration. Detailed management and administration functions are addressed in the Operational Management Plan (OMP), which implements the concepts of the MP into operational actions." Therefore, adoption of the MP under a "no effect" finding would also be supportable.

Adoption of the Proposed MP would be in compliance with the Act. Implementation of future specific actions under an OMP or otherwise would require separate assessment of effects to species and critical habitat in compliance with ESA.

- **The Magnuson-Stevens Fishery Conservation and Management Act (MSA)**

As amended, the MSA (Public Law 94-265), established procedures designed to identify, conserve, and enhance Essential Fish Habitat (EFH) for fisheries regulated under a federal fisheries management plan.

Federal agencies must consult with NMFS on all proposed actions authorized, funded, or carried out by the agency that may adversely affect EFH. Steelhead and bull trout are the only species in the area affected by the MSA.

The adoption of the Proposed MP would have no effect on chinook, steelhead, or bull trout or EFH. The proposed action would be in compliance with this Act.

- **The National Historic Preservation Act (NHPA)**

Section 106 of the NHPA (16 USC 470; recently codified at 54 USC 306108) requires that federal agencies evaluate the effects of federal undertakings on historic properties and afford the Advisory Council on Historic Preservation opportunities to comment on the proposed undertakings. The first step in the process is to identify cultural resources included in (or eligible for inclusion in) The National Register of Historic Places (NRHP) that are located or near the study area. The second step is to identify the possible effects of proposed actions. The lead agency must examine whether feasible alternatives exist that would avoid such effects. If an effect cannot reasonable be avoided, measures must be taken to minimize or mitigate potential adverse effects. Specific actions to be taken following approval of the proposed Master Plan would require project-specific determination of effects in accordance with Section 106 of the NHPA.

The Corps has determined that adoption of the Proposed MP has no potential to affect historic properties. However, as noted above, any project-specific actions implemented subsequent to adoption of the proposed Master Plan would require a determination of effect, and consultation with State Historic

Preservation Officers, Tribal Historic Preservation Officers, and interested parties where applicable in accordance with Section 106 of the NHPA.

- **Native American Graves Protection and Repatriation Act (NAGPRA)**

The NAGPRA (25 USCA. 3001) addresses the discovery, identification, treatment, and repatriation of Native American (and Native Hawaiian) human remains, associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony. This act also establishes fines and penalties for the sale, use, and transport of Native American cultural items.

The adoption of the Proposed MP would not require or trigger compliance with the Act. Future site actions would be reviewed for compliance with this Act.

- **Federal Water Pollution Control Act (Clean Water Act (CWA))**

The Federal Water Pollution Control Act (33 U.S.C. §1251 et seq., as amended) is more commonly referred to as the Clean Water Act. 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 United States. The act was established to restore and maintain the chemical, physical, and biological integrity of the Nation's waters and sets goals to eliminate discharges of pollutants into navigable water, protect fish and wildlife, and prohibit the discharge of toxic pollutants in quantities that could adversely affect the environment.

Adoption of the Proposed MP would not require or trigger compliance with the CWA. As discussed in the ESA section above, the proposed reclassification of portions of Alpowa, Asotin Creek, and Knoxway Canyon HMUs from land classification units currently allowing various forms of development, to Environmentally Sensitive Area land classification units, is intended to provide additional, long-term protection benefits to these areas. This reclassification would help protect these areas as required mitigation for the Section 401 Certification granted by the State of Washington Department of Ecology associated with the Swallows Beach Restoration Project..

Future site specific actions would be reviewed for compliance with the Act.

- **American Indian Religious Freedom Act (AIRFA)**

The American Indian Religious Freedom Act (AIRFA) of 1978 (42 USCA 1996) established protection and preservation of Native Americans' rights of freedom of belief, expression, and exercise of traditional religions. Courts have interpreted AIRFA to mean that public officials must consider Native Americans' AIRFA interests before undertaking actions that might harm those interests.

The Corps would continue to coordinate with affected Native American tribes on the Proposed MP.

- **Archaeological Resources Protection Act (ARPA)**

The Archaeological Resources Protection Act (16 USC 470aa-470ll) provides for the protection of archeological sites located on public and Native American lands, establishes permit requirements for the excavation or removal of cultural properties from public or Native American lands, and establishes civil and criminal penalties for the unauthorized appropriation, alteration, exchange, or other handling of cultural properties.

The Corps would continue to protect archeological resources and sites on lands within the Corps jurisdiction, in accordance with the Act.

- **The Clean Air Act (CAA)**

The CAA of 1970, as amended, established a comprehensive program for improving and maintaining air quality throughout the United States. Its goals are achieved through permitting of stationary sources, restricting the emission of toxic substances from stationary and mobile sources, and establishing National Ambient Air Quality Standards (NAAQS). Title IV of the CAA includes provisions for complying with noise pollution standards.

Adoption of the Proposed MP would have no adverse impacts on air quality and be in compliance with the Act. Implementing future plans or actions would require subsequent review to ensure compliance with the CAA

- **The Fish and Wildlife Coordination Act**

The Fish and Wildlife Coordination Act (FWCA) of 1934 requires Federal agencies involved in water resource development projects to consult with the USFWS and the state agency administering wildlife resources concerning proposed Federal water resources development projects that could result in the control or modification of a natural stream or body of water that might have effects on the fish and wildlife resources that depends on the body of water or it's associated habitat.

Adoption of the proposed MP would not be subject to the Act as it would not "result in the control or modification of a natural stream or body of water. Implementing future plans or actions would require subsequent review to ensure compliance with FWCA.

- **The Migratory Bird Treaty Act (MBTA)**

The MBTA (16U.S.C. S 703-712, as amended) prohibits the taking of and commerce in migratory birds (live or dead), any parts of migratory birds, their feathers, or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. The MBTA prohibits the harming, harassment, and take of protected species, except as permitted by the USFWS.

A wide variety of species listed under the MBTA occur on Corps managed lands within the Project area. There would be no take of migratory birds and the proposed action would not conflict with the purpose of the MBTA. The adoption of the Proposed MP would be in compliance with the MBTA. Implementing future plans or actions would require subsequent review to ensure compliance with MBTA.

- **The Bald and Golden Eagle Protection Act (BGEPA)**

The BGEPA prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions, primarily for Native American Tribes. Take under the BGEPA includes both direct taking of individuals and take due to disturbance. Disturbance is further defined on 50 CFR 22.3. Bald and golden eagles are known to nest and roost on Corps managed lands in the Project area. While nest sites have not been formally documented in the District, locations of some nests are known.

The adoption of the Proposed MP would be in compliance with the BGEPA and would not result in disturbance or take of bald or golden eagles. Implementing future plans or actions would require subsequent review to ensure compliance with BGEPA.

- **Watershed Protection and Floodplain Management Act**

The purpose of the Watershed Protection and Flood Prevention Act is to protect watersheds from erosion, floodwater, and sediment damages. The Act provides assistance programs to local organizations for the protection of watersheds, including risk management. The proposed project is in compliance with the Act.

The adoption of the Proposed MP would not affect upstream watersheds or the designed levels of flood protection provided by the Project. Implementing future plans or actions would require subsequent review to ensure compliance with WPFMA.

4.3 Executive Orders

- **Executive Order 11990, Protection of Wetlands, May 24, 1977**

This Executive Order (EO) requires Federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetland. Wetlands are regulated under Section(s) 401 and 404 of the Clean Water Act. Section 401, Water Quality Certification, ensures compliance with water quality standards.

Section 404 regulates activities within the Waters of the U.S., which includes the Snake River and its surrounding tributaries. The Corps is responsible for implementing and complying with these regulations. The effects to wetlands for all alternatives are essentially the same. However, the intent of the proposed MP would provide additional protection as the priority is responsible stewardship and sustainability.

Wetlands would not be detrimentally impacted by adoption of the Proposed MP. A detailed review of site specific actions would be completed to ensure wetland values and functions would not be affected. Implementing future plans or actions would require subsequent review to ensure compliance with the EO.

- **Executive Order 12898, Environmental Justice**

This EO requires federal agencies to consider and minimize potential impacts to subsistence, low income, or minority communities. The goal is to ensure that no person or group of people shoulder a disproportionate share of negative environmental impacts resulting from the execution of the country's domestic and foreign policy programs. The proposed MP is a conceptual planning document for strategic land management and development of project recreation, natural and cultural resources. It is intended for responsible stewardship and sustainability of resources. The proposed MP would not direct specific actions that would cause a disproportionate share of negative environmental impacts to a person or group of people.

Adoption of the Proposed MP would not conflict with requirements of this E.O. Implementing future plans or actions would require subsequent review to ensure compliance with the EO.

- **Executive Order 13007, Native American Sacred Sites, May 24 1986**

Executive Order 13007 directs federal agencies to accommodate access to and ceremonial use of tribal sacred sites by tribal 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.

Adoption of the Proposed MP would not adversely affect any Native American sacred sites. The Corps would consult with tribes in the future when implementing the MP, as appropriate, concerning sacred sites in compliance with the EO.

- **Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, November 6, 2000, and Presidential Memorandum, “Government to Government Relations with Native American Tribal Governments, April 29, 1994**

Executive Order 13175 sets forth guidelines for all federal agencies to establish regular and meaningful consultation and collaboration with Indian tribal officials in the development of federal policies that have tribal implications; strengthen the United States government-to-government relationships with Indian tribes; and reduce the imposition of unfunded mandates on Indian tribes.

The Presidential Memorandum of 1994 states in part that, “each...department and agency shall consult, to the greatest extent practicable and permitted by law, with tribal governments prior to taking actions that affect federally recognized tribal governments.”

The Corps sent letters offering government-to-government consultation to the Confederated Tribes of the Colville Reservation, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Confederated Tribes and Bands of the Yakama Reservation, and the Nez Perce Tribe on March 6, 2017. No comments were received from the Tribes.

The Corps also sent letters to the Confederated Tribes of the Colville Reservation, the CTUIR, the Confederated Tribes and Bands of the Yakama Reservation, and the Nez Perce Tribe March 6, 2017, requesting scoping comments regarding the proposed MP update. The Proposed MP, along with the Draft FONSI and EA, was provided to the Nez Perce and the CTUIR Tribes, with a letter requesting review and comment, on June 5, 2018.

The Proposed MP would not authorize any new site specific actions, which could have tribal implications or affect tribal governments. Site-specific actions would be identified in future 5-year OMPs, which would require tiered NEPA review and compliance specific to all applicable laws. The Corps did, however, offer consultation with the Nez Perce and the CTUIR on development and proposed adoption of the Proposed MP.

4.7 State and Local Regulations

On a case-by-case basis, state or local laws and ordinances may also be applicable to any potential project implementation, based on aspects of the individual project. A state water quality certification is an example of a potential instance where a state permit or authorization may be a requirement for project implementation. Adoption of the Proposed MP would not trigger compliance with any state or local laws or regulations. On a case by case basis these requirements would be addressed for site specific actions under OMPs.

SECTION 5 – PUBLIC COORDINATION, CONSULTATION, AND INVOLVEMENT

5.1 Public Scoping Process

A 30 day public scoping process for the Proposed MP was initiated on March, 22 2017 and was extended another 30 days until May 22, 2017. Letters were sent to interested public, organizations, stakeholders, federal and state congressional offices, and agencies offering the opportunity to comment on the scoping process for the master plan update.

The Corps of Engineers conducted a public scoping meeting in Clarkston, Washington on March 22, 2017 and in Pullman, Washington on March 23, 2017, to support the MP update. Scoping meetings are a useful tool to obtain information from the public and governmental agencies. For a planning process such as the MP revision, the scoping process was also used as an opportunity to get input from the public and agencies about the vision for the MP update and the issues that the MP should address where possible. The meetings were attended by approximately 80 individuals. The Corps received about 70 suggestions and comments related to management issues and recreation at the Project. A majority of the comments focused on:

- Recreational opportunities
- Real estate and access
- Dam removal
- Control of invasive plant species

The general concepts presented included providing access to the Project and surrounding areas, to enhance the wildlife habitat and recreational opportunities, and consideration of local economic development opportunities. Comments compiled from attendees at the public scoping meeting and other sources were used to update the MP.

The Corps has a webpage to disseminate information and collect comments for the MP update. Draft and Final versions of the MP, FONSI and EA will be placed on this webpage, at the location identified below.

5.2 Draft Document Review

The Draft MP, Draft FONSI and EA were released to the public, Tribes and interested parties on June 5th, 2018 for a 21 day review period, which was extended 14 days until July 10, 2018. Eighteen comments were received during the review period. Comments were evaluated, with comment responses becoming an attachment to the final FONSI. The MP, FONSI and EA can be viewed on the Corps website at:

<http://www.nww.usace.army.mil/Locations/District-Locks-and-Dams/Lower-Granite-Master-Plan/>

5.3 Tribal Coordination

The Corps sent letters to the Confederated Tribes of the Colville Reservation, the CTUIR, the Confederated Tribes and Bands of the Yakama Reservation, and the Nez Perce Tribe on March 6, 2017, requesting scoping comments regarding the proposed MP update. The letters also offered Government to Government consultation on the MP update with the Tribes throughout this process.

On June 5, 2018, the Corps sent letters to the Confederated Tribes of the Colville Reservation, the CTUIR, the Confederated Tribes and Bands of the Yakama Reservation, and the Nez Perce Tribe requesting review and comment on the Draft MP, FONSI and EA. The letters also offered Government to Government consultation with the Tribes throughout this process.

SECTION 6 – ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CWA	Clean Water Act
CEQ	Council on Environmental Quality
CFS	Cubic Feet Per Second
ESA	Endangered Species Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EP	Engineering Pamphlet
ER	Engineering Regulation
FCP	Flood Control Project
HMU	Habitat Management Unit
LSRFWCP	Lower Snake River Fish and Wildlife Compensation Plan
MP	Master Plan
MOP	Minimum Operating Pool
MSL	Mean Sea Level
MW	Megawatt
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
OHWM	Ordinary High Water Mark
OMP	Operational Management Plan
PL	Public Law
RO	Resource Objective
Corps	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Services
WRDA	Water Resources Development Act

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APPENDIX A

**FEDERAL NATURAL RESOURCES LAW COMPLIANCE AND
BIOLOGICAL EVALUATION**

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**US Army Corps
of Engineers** ®
Walla Walla District
BUILDING STRONG®

LOWER GRANITE MASTER PLAN REVISION

GRANITE LAKE AND LOWER GRANITE DAM

**Federal Natural Resources Law Compliance
and
Biological Evaluation**

AMENDMENT

ADMINISTRATIVE RECORD – DO NOT DESTROY

FILE NUMBER: PM-EC-2017-0028

June 2018

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SUMMARY

This biological evaluation amendment is prepared pursuant to section 7(a)(2) of the Endangered Species Act (ESA) to evaluate the effects of reclassifying lands managed by the U.S. Army Corps of Engineers (Corps), Walla Walla District, on listed species under the jurisdiction of the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. The Corps is presently updating the Master Plan (MP) for the Lower Granite Project, which encompasses all Corps lands from Lower Granite Dam upstream in Granite Lake on the lower Snake and Clearwater Rivers.

The original Lower Granite MP was drafted in 1974. The development of the Lower Snake River Fish and Wildlife Compensation Plan (Comp Plan) in 1975 immediately changed acreage and associated classifications for the Lower Granite Project. Land use classification changes are being proposed for the MP update among four broad categories to reflect land management as a result of the Comp Plan, as well as public comment, and resource manager prioritization. Land use categories are 1) Operations; 2) Recreation; 3) Wildlife; 4) Mitigation. The proposed action would increase designated Wildlife and Mitigation acreage by 980.5 (129.4%) and 376.7 (7.1%) acres, respectively, totaling 7,394.3 acres between the two.

There would be no degradation of the environmental baseline as a result of the proposed action or Corps land management actions. The proposed increase in acreage for wildlife and mitigation classifications would ensure habitat enhancements and maintenance precluding development.

The Corps concludes that the proposed action “may affect, but is not likely to adversely affect” Snake River sockeye, Snake River spring/summer Chinook, Snake River fall Chinook, Snake River steelhead, bull trout, yellow-billed cuckoo, and Spalding’s catchfly. The Corps further determined the proposed action “may affect, but is not likely to adversely affect” critical habitat for ESA-listed fishes, and would have “no effect” on yellow-billed cuckoo proposed critical habitat. Critical habitat is not designated for Spalding’s catchfly. The Corps is requesting informal consultation for land use classification changes and associated actions not previously consulted on at the program level.

In addition, this document analyzes the project's likely effects on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act. The Corps has also determined that the proposed project would result in no take of species listed under the Migratory Bird Treaty Act, and no disturbance or take under the Bald and Golden Eagle Protection Act.

If additional information regarding this document is required, please contact Brad Trumbo, Biologist in the Environmental Compliance Section of the U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7257, or by email at bradly.a.trumbo@usace.army.mil. Other correspondence can be mailed to:

Brad Trumbo
U.S. Army Corps of Engineers Walla Walla District
201 North Third Ave.
Walla Walla, WA 99362

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Brad Trumbo
Biologist/Preparer
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

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Date: 2018.06.07 08:53:04 -07'00'

Ben Tice
Biologist/Reviewer
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

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Acronyms and Abbreviations

BA	Biological Assessment
BE	Biological Evaluation
BGEPA	Bald and Golden Eagle Protection Act
CFR	Code of Federal Regulations
Comp Plan	Lower Snake River Fish and Wildlife Compensation Plan
Corps	Walla Walla District, U.S. Army Corps of Engineers
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act of 1973, as amended
ESU	Evolutionarily Significant Unit
FR	Federal Register
FWCA	Fish and Wildlife Coordination Act
MBTA	Migratory Bird Treaty Act
MP	Master Plan
MPI	Matrix of Pathway Indicators
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
NRM	Natural resource Management
PBF	Physical and Biological Features
RM	River Mile
USFWS	U.S. Fish and Wildlife Service

1. Federal Action

1.1 Introduction

The U.S. Army Corps of Engineers, Walla Walla District (Corps), is revising the Lower Granite Dam Master Plan (MP). The MP is a document developed to guide the management of Lower Granite Reservoir (Granite Lake) and its associated public lands. The MP also cites the laws authorizing and governing the development of natural and man-made project resources to include recreational opportunities and fish and wildlife habitat enhancements.

The MP is a strategic land use document that guides the comprehensive management and development of all Project recreational, natural, and cultural resources throughout the life of the Project. The MP focuses on overarching management goals and objectives to guide and articulate Corps responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources at the Project.

The MP does not specify or authorize actions and does not address regional water quality, water management, or the operation and maintenance (O&M) of project operations facilities such as Lower Granite Lock and Dam.

The original MP was finalized in 1974 and is in need of updating to accommodate present management goals and objectives. Master Plans are inherently living documents, meaning periodic updates are important to maintain MP relevancy for any given Project. Estimating the intrinsic and economic value of resources to the public is important for guiding resource management actions, and these values must be updated for present day as well.

Land use classifications presented in the 1974 MP must be updated as acreages and management purposes have changed on Corps lands, particularly in accordance with the 1975 Lower Snake River Fish and Wildlife Compensation Plan (Comp Plan). The proposed land use classification changes presented in the updated MP are the product of the Comp Plan, public comment, and resource manager prioritization.

This biological evaluation (BE) is prepared pursuant to section 7(a)(2) of the Endangered Species Act (ESA) to provide a high-level evaluation of the effects of the proposed land use classification changes for Granite Lake on ESA-listed species and their critical habitats under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS), collectively referred to as "Services". The Corps is requesting informal consultation for land use classification changes and associated actions not previously consulted on at the program level. Actions affecting fish and wildlife resources resulting from land use classification changes are covered under prior consultations.

1.2 Previous Consultation

The original Granite Lake MP did not include any ESA consultation process. The development of Lower Granite Dam included an environmental impact statement that considered the effects to natural resources and fish and wildlife. Since Lower Granite Dam came online in 1975, numerous wildlife habitat management actions under the MP and Comp Plan individually underwent ESA consultation.

Relevant prior consultations are listed below. See Appendix A for referenced responses from the Services.

1. May 2018: A revised *Aquatic Pest Management Program* BA was submitted to the Services requesting informal consultation on programmatic aquatic invasive species control actions.
2. December 2016: The *Lower Snake River Wildlife Habitat Planting* supplemental BA was submitted to the USFWS requesting informal consultation on programmatic habitat planting activities under the Comp Plan at Central Ferry and Rice Bar HMUs. While a 2013 consultation included typical planting actions and associated effects, the proposed plantings at Central Ferry and Rice Bar were to include contouring of three to four feet of ground surface with heavy equipment to facilitate water table connectivity for riparian plants. The USFWS concurred with a determination of “may affect, not likely to adversely affect” bull trout or their critical habitat in April, 2017 (01EWF00-2017-I-0294).
3. March 2014: The *Aquatic Pest Management Program* BA was submitted to the Services requesting informal consultation on programmatic aquatic invasive species control actions. A biological opinion was received from USFWS in May, 2017 (01EWF00-2014-F-0335). A biological opinion was also received from NMFS in April, 2016 (WCR-2014-688), but was determined not implementable by the Corps. Consultation on a “Phase II” of the Aquatic Pest Management Program is ongoing with NMFS.
4. July 2013: The *Lower Snake River Programmatic Planting Plan* BA was submitted to the Services requesting informal consultation on programmatic habitat planting activities within Corps HMUs, including Lyon’s Ferry on the Palouse River, east up the lower Clearwater and Snake Rivers in Lewiston, Idaho. The USFWS concurred with a determination of “may affect, not likely to adversely affect” bull trout or their critical habitat (01EWF00-2013-I-0046). The NMFS also concurred with the determination of “may affect, not likely to adversely affect” for anadromous salmonids and their critical habitat (NWR-2013-10331).
5. July 2012: *The Pest Management Program for Corps of Engineers Managed Lands in the Walla Walla District in Oregon, Idaho, and Washington* BA was submitted to the Services requesting informal consultation on programmatic

invasive species control actions. The USFWS concurred with a determination of “may affect, not likely to adversely affect” bull trout or their critical habitat (01EWF00-2012-I-0378). The NMFS also concurred with the determination of “may affect, not likely to adversely affect” for anadromous salmonids and their critical habitat (2012/00353). No aquatic actions are covered under this consultation.

Operation and maintenance of Lower Granite Lock and Dam and associated facilities is not covered in the MP or this BA. Separate consultation has occurred with NMFS (2008, 2010, and 2014) and is in progress with USFWS for O&M of the Federal Columbia River Power System.

1.3 Proposed Action

The proposed action is to update the Granite Lake MP, which involves changing land use classifications on Corps-managed lands. The primary purpose of this project is to accommodate past and future fish and wildlife habitat and recreational enhancements.

1.3.1 Project Location

Lower Granite Dam is located approximately 27 miles northeast of Pomeroy, WA, and southwest of Pullman, WA (46°39'37" North, 117°25'37" West) at River Mile (RM) 107.5 on the Snake River (Figure 1). The dam lies within the Lower Snake – Tucannon Hydrological Unit Code (17060107); Washington Township 14 North, Range 43 East, Section 32. The dam straddles both Garfield and Whitman Counties, while Granite Lake extends up the Snake River into Asotin County, WA, and up the Clearwater River into Nez Perce County, ID.

1.3.2 Action Area

Granite Lake includes and extends from Lower Granite Dam upriver to approximately RM 147 on the Snake River, and RM 11 on the lower Clearwater River from its confluence with the Snake River (Figure 2).

The action area was originally estimated to encompass approximately 4,706 acres for fish and wildlife and recreation around Lower Granite Dam and upstream along the shoreline of Granite Lake. The present acreage estimate is approximately 8,626 acres.

1.3.3 Project Description

The Granite Lake MP revision is a planning exercise where Corps Natural Resource Management (NRM) personnel inventoried current land use classifications and the present status of recreation and habitat features on Corps land. The Corps managers then sought public input on land use and recreation activities. Finally, the Corps developed alternatives based on NRM recommendations and public input.

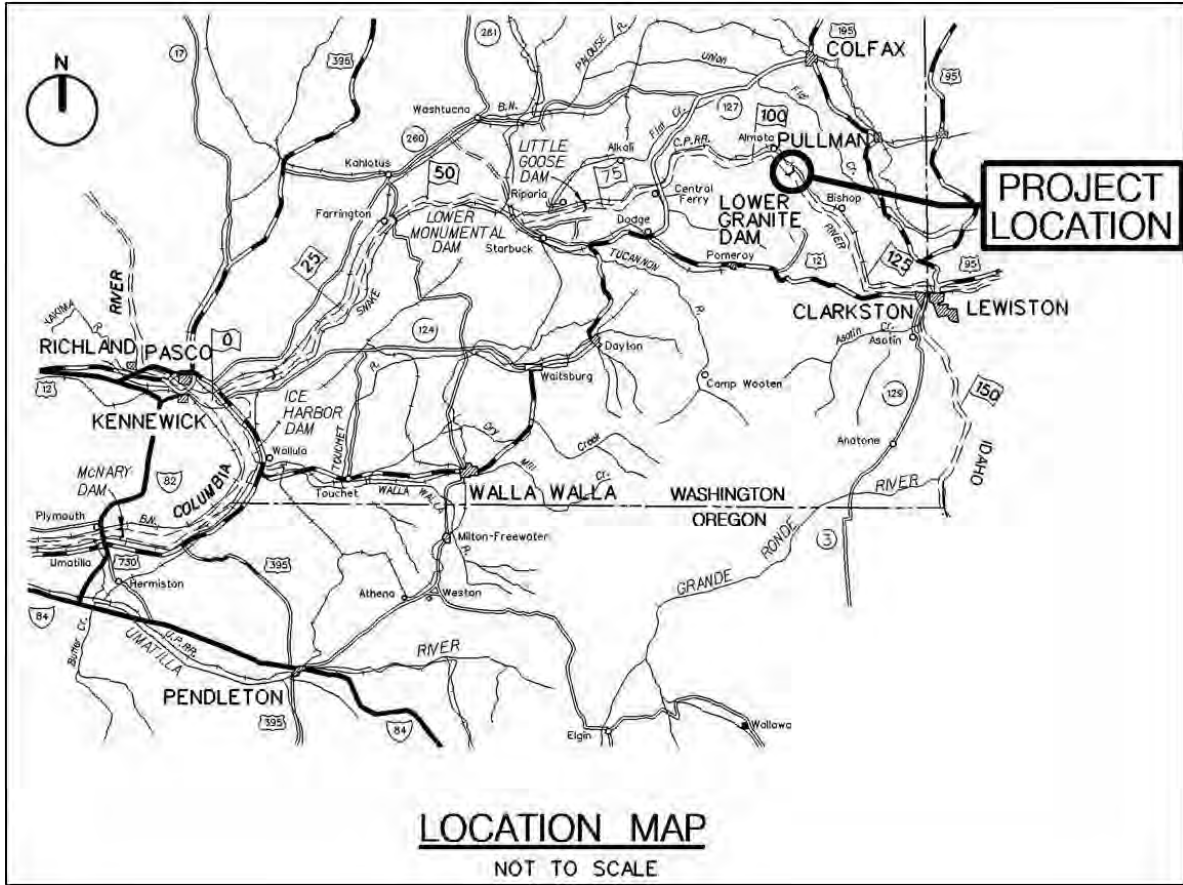


Figure 1. Geographic location of Lower Granite Dam.

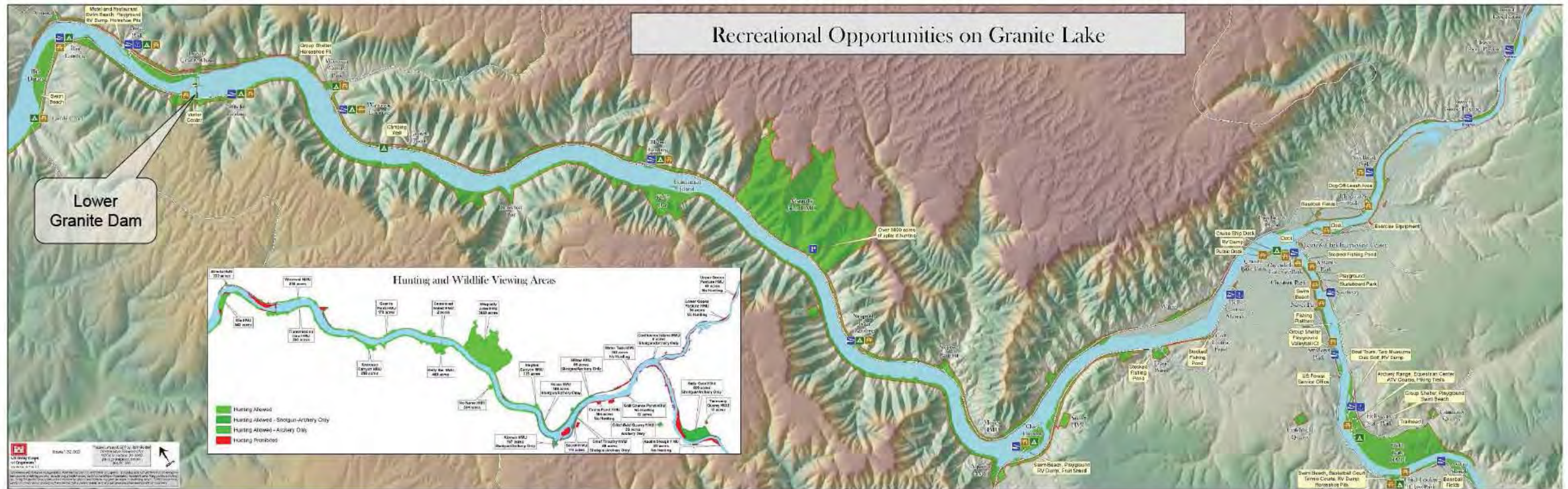


Figure 2. Spatial extent of Granite Lake lands (action area). Lands subject to reclassification occur upstream of Lower Granite Dam and are shaded green.

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The alternatives were used to develop an environmental assessment and recommended alternative detailing final proposed land use changes for the updated MP.

There are four broad land use categories: Operations, Recreation, Wildlife, and Mitigation. Alternatives considered were:

1. No Action
2. Recreation-Centric
3. Wildlife-Centric
4. Balanced Approach

Table 1 presents past, present, and future land use classifications. The recommended alternative (wildlife-centric) increases the total Project acreage by 10.5 acres to 8,637.7. Acreage classified as Operations and Recreation would be reduced and shifted to Wildlife and Mitigation, increasing these classes by 980.5 (129.4%) and 376.7 (7.1%) acres, respectively, and totaling 7,394.3 acres between the two. Figure 3 presents the percentage breakdown of classification acreages for the existing and proposed conditions.

The increased acreage for wildlife and mitigation purposes bolsters the Corps ability to enhance habitat and reduce recreation maintenance budgets. While habitat management actions may not see increased acreage commensurate with the land use classification changes on an annual basis, habitat management actions including grassland management, invasive species control, and riparian and shrub-steppe planting are certain to continue into the foreseeable future. HMU management objectives and plans are jointly developed among the Corps, Washington Department of Fish and Wildlife, and the USFWS, presently under the Comp Plan, and continuing into the foreseeable future.

Table 1. Past, present, and future land use classifications (acres) for the Lower Granite Project.

Land Classification	1974	2018	2019 and Beyond	Change 2018-2019	
Operations	70.4	542	366.2	-175.8	-32.5%
Recreation	1,546.5	2,047.1	876.2	-1,170.9	-57.2%
Wildlife	2,404.4	757.5	1,738	980.5	129.4%
Mitigation	50.3	5,279.6	5,656.3	376.7	7.1%
Total Acres	4,705.6	8,626.2	8,637.7	10.5	0.12%

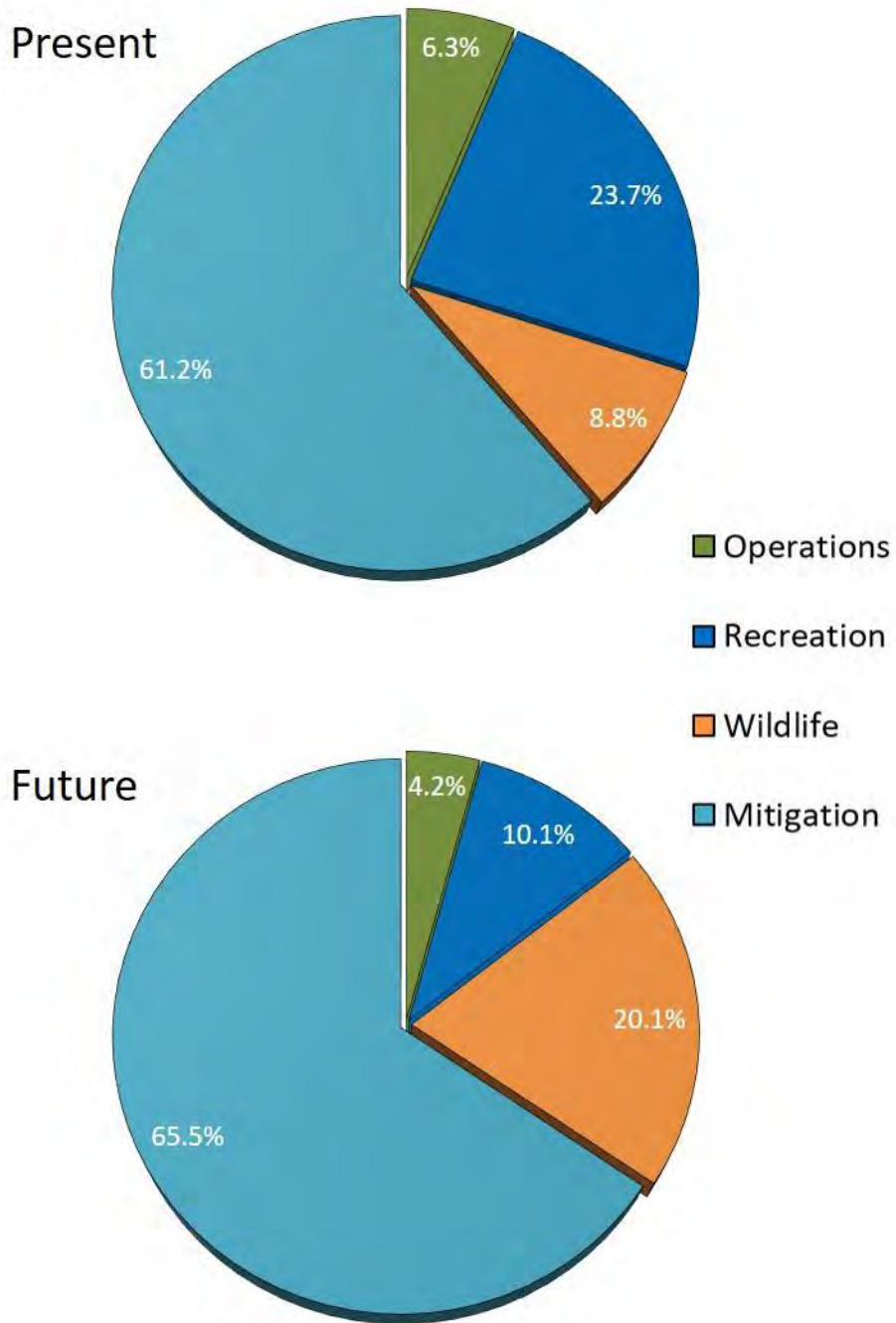


Figure 3. Present and proposed future land use classification percentages among Granite Lake Project lands.

1.3.3.1 Project Activities

Project activities covered in this BA include the administrative land use classification changes and their broad implications for ESA-listed fish, wildlife, and plants. General habitat and recreation area management activities that would continue to occur are discussed below, as well as which ESA consultation covers the activities.

Habitat management actions include the following, all of which satisfy the requirements of the Comp Plan.

- Terrestrial invasive plant control through mowing, herbicide application, and biological controls (covered under USFWS consultation 01EWF00-2012-I-0378 and NMFS consultation 2012/00353).
- Aquatic invasive plant control through mowing, herbicide application, and biological controls (covered somewhat under USFWS consultation 01EWF00-2014-F-0335 and NMFS consultation WCR-2014-688 and presently in consultation).
- Native grass reseeding and tree and shrub planting (covered under USFWS consultations 01EWF00-2017-I-0294 and 01EWF00-2013-I-0046 and NMFS consultation NWR-2013-10331). A present contract for the restoration of 60 acres in Lake Bryan (not included in the Lower Granite Dam MP) is the final planting project of this size to be completed under the Comp Plan.
- Irrigation of trees and shrubs (covered under USFWS consultations 01EWF00-2013-I-0046 and 01EWF00-2017-I-0294, and NMFS consultation NWR-2013-10331).
- Food plot planting and maintenance. This would include planting food crops such as wheat and corn for upland wildlife and waterfowl. There are five food plots on Granite Lake lands.

Recreation areas were developed when Lower Granite Dam was constructed over forty years ago. Presently, fifteen recreation areas exist on Granite Lake including parks and boat access sites. Land acreage classified as recreation are proposed to be reduced by approximately 57% (Table 1) as natural areas occur within the boundaries of recreation lands. Corps activities associated with recreation areas include the following.

- Terrestrial invasive plant control through mowing, herbicide application, and biological controls. Lawn maintenance by mowing (covered under USFWS consultation 01EWF00-2012-I-0378 and NMFS consultation 2012/00353).
- Aquatic invasive plant control through mowing, herbicide application, and biological controls (covered somewhat under USFWS consultation 01EWF00-2014-F-0335 and NMFS consultation WCR-2014-688 and presently in consultation).
- Native and lawn grass reseeding or turf replacement in developed recreation areas. Only four recreation areas are likely to receive turf.

- Infrastructure maintenance in developed recreation areas such as picnic shelter painting and reroofing, sidewalk or parking lot repair, or other maintenance internal to a structure.

Activities not specifically covered under prior consultations (as identified above) include food plot planting and maintenance in HMUs, and infrastructure maintenance and lawn grass seeding in developed recreation areas. These activities have not been consulted because the Corps has determined no effect for ESA-listed species. General Activities associated with these activities include the following.

- Food plot planting and maintenance
 - Surface tillage
 - Seeding via broadcast or drill seeder
- Native and lawn grass reseeding or turf replacement in developed recreation areas.
- Infrastructure maintenance in developed recreation areas such as picnic shelter painting and reroofing, sidewalk or parking lot repair, or other maintenance internal to a structure.

Effects for these actions are presented in this BA in Section 4. It should also be noted that recreational fishing and hunting activities are not authorized or regulated by the Corps, but by state fish and wildlife agencies. Therefore, recreational fishing for ESA-listed fishes is addressed between the states and the Services.

1.3.3.2 Project Timeline

Acceptance by the Corps of the final Lower Granite Master Plan would mark the official change of land use classifications as proposed. The following is an anticipated timeline for the proposed action to take place.

- March 2018: The Draft Final MP and Environmental Assessment (EA) are completed.
- April 2018: Internal quality control review of the MP and EA is completed.
- May 2018: The MP and EA are released for a 30-day public comment period
- June – July 2018: The Corps responds to comments on the MP and EA
- July – August 2018: The MP and proposed action are finalized pending no significant comments are received during the public comment period.

1.3.4 Proposed Conservation Measures

The proposed land use classification change of 1,357.2 acres from Operations and Recreation classifications to Wildlife and Mitigation is a conservation measure within itself and supports the Corps mitigation requirements under the Comp Plan.

1.3.5 Interdependent and Interrelated Actions

The acreage and locations of future wildlife habitat enhancement actions would be interrelated with the proposed land use classification changes.

1.3.6 Previous and Ongoing Projects in the Action Area

Habitat management and enhancement actions have occurred for over thirty years, and will continue within the action area for the foreseeable future. There are 24 HMUs within the action area and a habitat management contract is in place to manage these units. Management actions are identified and prioritized by the Lower Granite Wildlife Biologist, the USFWS, and the Washington Department of Fish and Wildlife.

Recreation including but not limited to boating, camping, fishing, hunting, hiking, birding, picnicking, and photography have and will continue to occur among acreage classified as Recreation, Wildlife, and Mitigation. Management of acreage classified as Recreation and associated facilities has and will continue to occur into the foreseeable future.

Activities on acreage classified as Operations generally includes operation and maintenance of the dams, fish passage facilities, and other appurtenances. These activities will also occur into the foreseeable future.

2 Listed Species

2.1 Species Listed for the Action Area

The Corps reviewed the list of threatened and endangered species that pertain to the action area under the jurisdiction of the USFWS on 28 February, 2018 [USFWS Ref# 01EWF00-2018-SLI-0122; 01EIFW00-2018-SLI-0076 (Table 2)].

Table 2. Threatened and endangered species and designate critical habitats occurring in the action area.

Species	Scientific Name	Status	Critical Habitat
NMFS			
Snake River Sockeye	<i>Oncorhynchus nerka</i>	Endangered	Yes
Snake River Spring/Summer Chinook	<i>O. tshawytscha</i>	Threatened	Yes
Snake River Fall Chinook Salmon	<i>O. tshawytscha</i>	Threatened	Yes
Snake River Steelhead	<i>O. mykiss</i>	Threatened	Yes

Table 2 Continued.

Species	Scientific Name	Status	Critical Habitat
USFWS			
Bull Trout	<i>Salvelinus confluentus</i>	Threatened	Yes
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	Threatened	Proposed
Spalding’s Catchfly	<i>Silene spaldingii</i>	Threatened	No

2.2 Species Status

2.2.1 Snake River Sockeye

2.2.1.1 Listing History

Snake River sockeye salmon were listed as endangered on November 20, 1991 (56 FR 58619), and reaffirmed most recently, April 14, 2014 (79 FR 20802). Under NOAA Fisheries’ interim policy on artificial propagation, the progeny of fish from a listed population that are propagated artificially are considered part of the listed species and are protected under the ESA. Thus, although not specifically designated, sockeye salmon produced in the captive broodstock program are included in the listing. Given the dire status of the wild population under any criteria (16 wild and 264 hatchery-produced adult sockeye returned to the Stanley Basin between 1990 and 2000), NMFS considers the captive broodstock and its progeny essential for recovery.

2.2.1.2 Distribution

Snake River sockeye were historically abundant in several lake systems of Idaho and Oregon. However, almost all populations have been extirpated in the past century; the only remaining sockeye in the Snake River system are found in Redfish Lake, in the Stanley Basin on the Salmon River (Figure 4). The non-anadromous form (kokanee), found in Redfish Lake and elsewhere in the Snake River Basin, is included in the evolutionarily significant unit (ESU). Sockeye occur within the action area only during their smolt and adult migrations.

2.2.1.3 Life History/Biological Requirements

Sockeye salmon are unique among the anadromous salmonids in the Columbia River Basin because they spawn and juveniles rear in a lake rather than tributary stream. In general, juvenile sockeye salmon rear in the lake environment for one to three years before migrating to sea. Adults typically return to the natal lake system to spawn after spending one to several years in the ocean. Sockeye use the Snake and Columbia

Rivers as a migration corridor. Some juveniles have been observed in shoreline areas during the spring. All juveniles normally migrate out of the action area by July.

2.2.1.4 Factors for Decline

Beginning in the late 19th century, anadromous sockeye salmon were affected by heavy harvest pressures, unscreened irrigation diversions, and dam construction. From 1954 to 1990, the Idaho Department of Fish and Game actively tried to eradicate sockeye salmon from Pettit, Stanley, Yellowbelly, and Hell Roaring Lakes (NMFS 2015). Their plan at the time was to increase the rainbow trout population for anglers. Increased predation on juvenile salmonids due to the habitat changes is also a contributor to the declining salmonid population.

In 1910, impassable Sunbeam Dam was constructed 20 miles downstream of Redfish Lake. Although several fish ladders and a diversion tunnel were installed during subsequent decades, it is unclear whether enough fish passed above the dam to sustain the run. The dam was partly removed in 1934, after which Redfish Lake runs partially rebounded. Evidence is mixed as to whether the restored runs constitute anadromous forms that managed to persist during the dam years, non-anadromous forms that became migratory, or fish that strayed in from other areas.

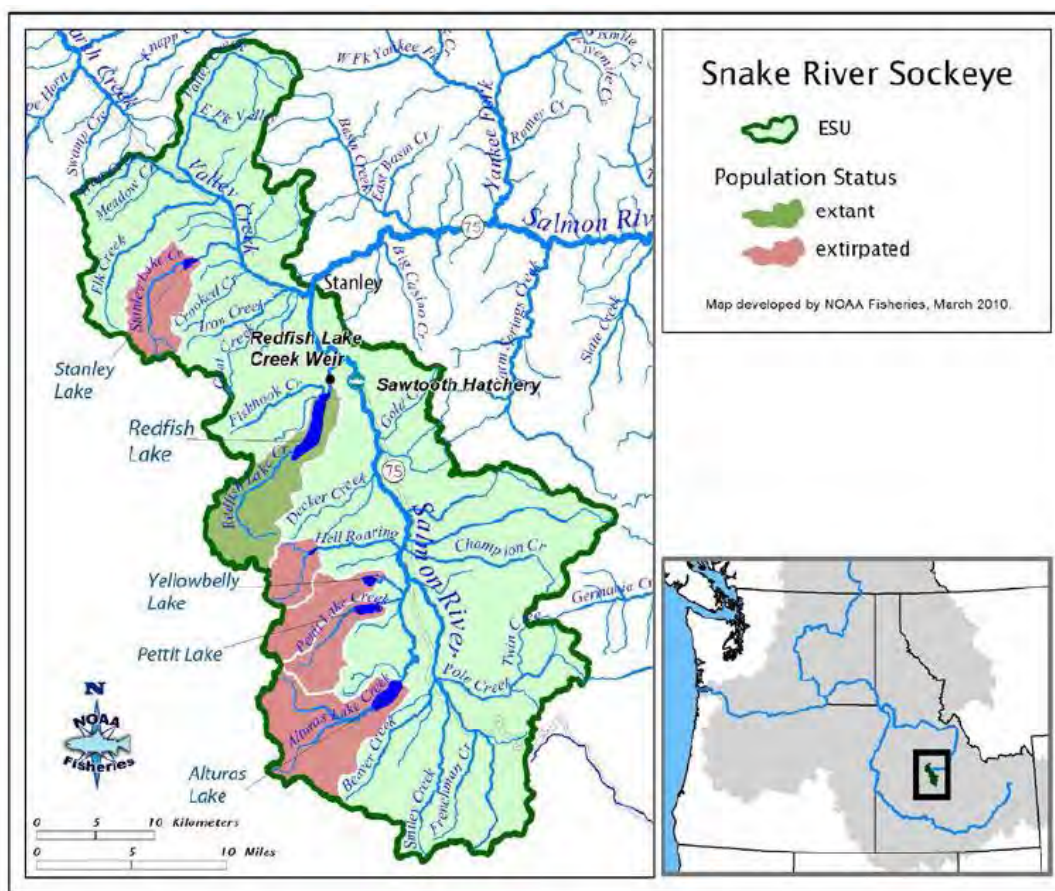


Figure 4. Snake River sockeye salmon distribution (NMFS 2015).

Impacts from habitat alterations, irrigation withdrawals, dam passage, and poor ocean conditions continue to affect sockeye and the extremely low sockeye population is likely the main factor limiting recovery. NMFS proposed an interim recovery level of 2,000 adult sockeye salmon in Redfish Lake and two other lakes in the Snake River Basin. Currently, NMFS considers the status of this ESU to be dire under any criteria with a high risk of extinction.

2.2.1.5 Local Empirical Information

Wild Snake River juvenile sockeye salmon generally migrate downriver during April through June, and wild adult sockeye salmon are not typically counted at Lower Granite Dam before June or after October (Figure 5). Once returning adults enter the Columbia River they are susceptible to tribal gill net fisheries and potential angling pressure between the mouth of the Columbia and the Snake River. Upper Columbia runs such as the Wenatchee and Okanogan River populations typically see larger runs, sometimes into the 100,000s, but there is no way to visually determine from which run a sockeye may have originated.

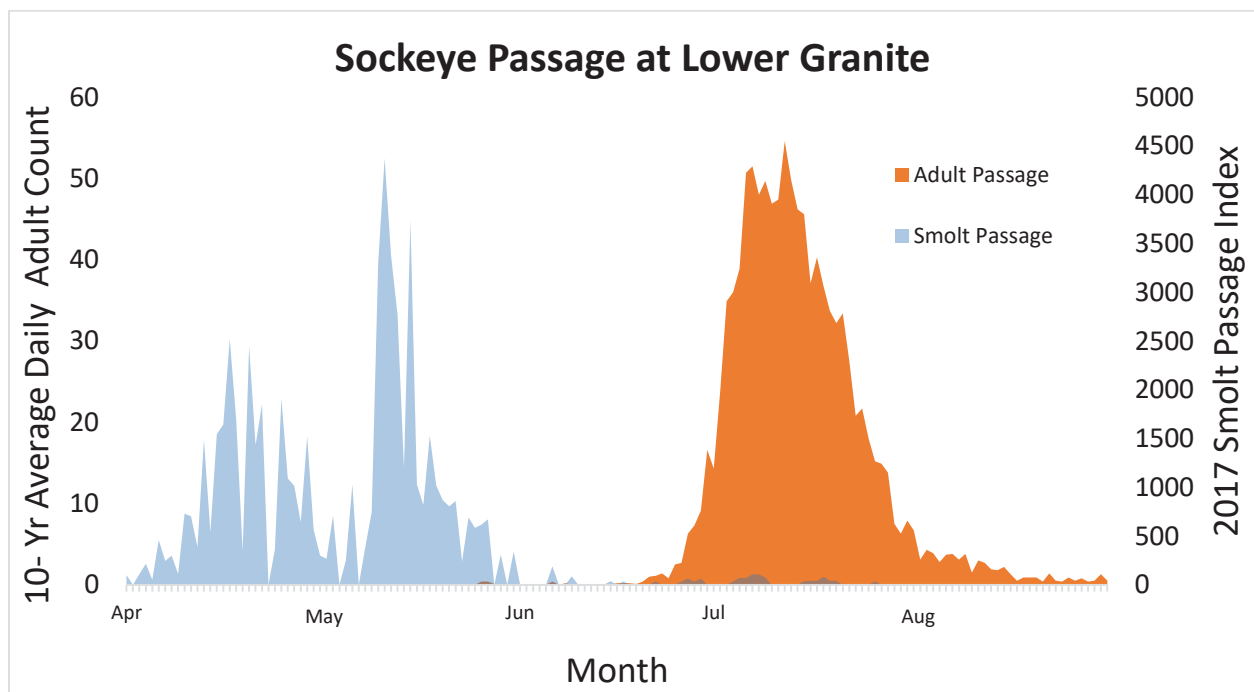


Figure 5. Passage timing and counts of adults and 2017 smolt passage index estimates of Snake River sockeye salmon passing Lower Granite Dam (DART 2018). Data are based on adult fishway counts and juvenile fish facility sampling.

2.2.2 Snake River Spring/Summer Chinook

2.2.2.1 Listing History

Snake River spring/summer Chinook salmon were listed as threatened on April 22, 1992 (57 FR 14653) and reaffirmed most recently, April 14, 2014 (79 FR 20802).

Spring/summer Chinook are found in several subbasins of the Snake River. Some or all of the fish returning to several of the hatchery programs are also listed including those returning to the Tucannon River, Imnaha, and Grande Ronde hatcheries, and to the Sawtooth, Pahsimeroi, and McCall hatcheries on the Salmon River.

2.2.2.2 Distribution

Historically, spring/summer Chinook salmon spawned in virtually all accessible, suitable habitat in the Snake River system. Presently, spring/summer Chinook migrate through the lower Snake River, and the Grande Ronde, and may spawn in the Salmon River and its tributaries, as well as tributaries to the Grande Ronde (Figure 6).

2.2.2.3 Life History/Biological Requirements

In the Snake River, spring/summer Chinook are stream-type fish with juveniles that migrate swiftly to sea as yearlings. Depending primarily on location within the basin (not run type), adults tend to return after either two or three years in the ocean. Like most salmonids in the Pacific Northwest, they spawn and rear in small, high-elevation streams.

2.2.2.4 Factors for Decline

Even before mainstem Snake River dams were built, habitat was lost or severely damaged in small tributaries by construction and operation of irrigation dams and diversions, inundation of spawning areas by impoundments, and siltation and pollution from sewage, farming, logging, and mining (NMFS 2017).

In 1927, major subbasins in the Clearwater River Basin were blocked to Chinook salmon by the construction of Lewiston Dam, which has since been removed. Tributary streams upstream of the Salmon River were completely blocked by the 1960's by construction of the Hells Canyon Complex. The lower Snake River dams have also impacted a portion of the remaining population. By the mid-1900s, the abundance of adult spring and summer Chinook salmon had greatly declined.

Factors such as injury while passing through dams, predation, and high water temperatures continue to impact Snake River Chinook. The limited amount of high quality habitat available is likely the main factor limiting recovery of Snake River spring/summer Chinook salmon.

2.2.2.5 Local Empirical Information

During the late 1800s, the Snake River produced a substantial portion of all Columbia River Basin spring and summer Chinook salmon (NMFS 2017). Juvenile spring Chinook salmon have been documented using the backwater areas of the McNary reservoir for rearing. Although sampling has not occurred during the cooler water months in the lower Snake River, it is reasonable to assume that individuals of Snake River spring/summer Chinook salmon could use the backwater areas of lower Snake River reservoirs for periods of rearing or overwintering between September and March.

Because this ESU is an upriver stock, no spawning habitat is present in the lower Snake River. Most adult Snake River spring/summer Chinook salmon migrate through the lower Snake River between April and mid-July (Figure 7).

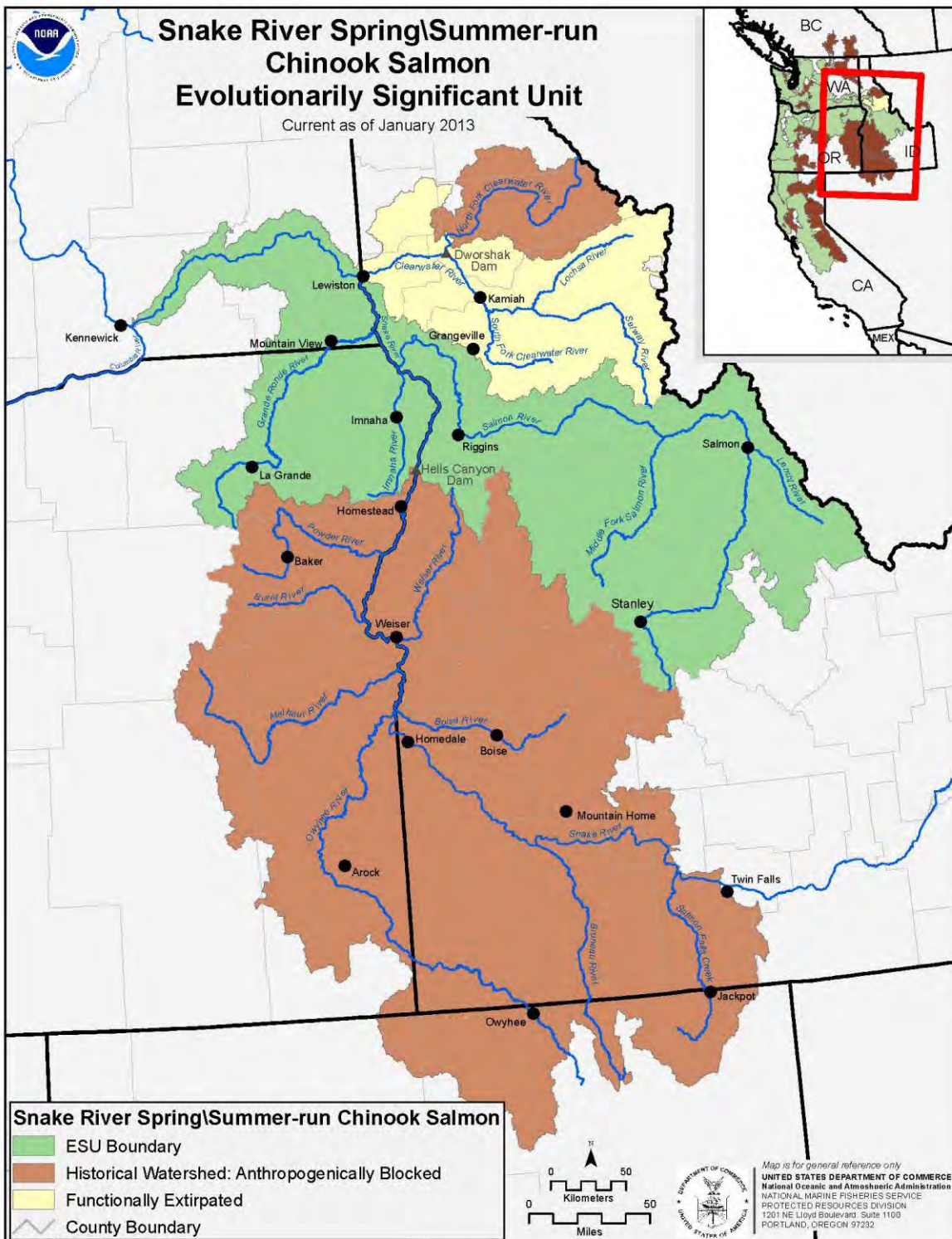


Figure 6. Snake River spring/summer Chinook salmon distribution.

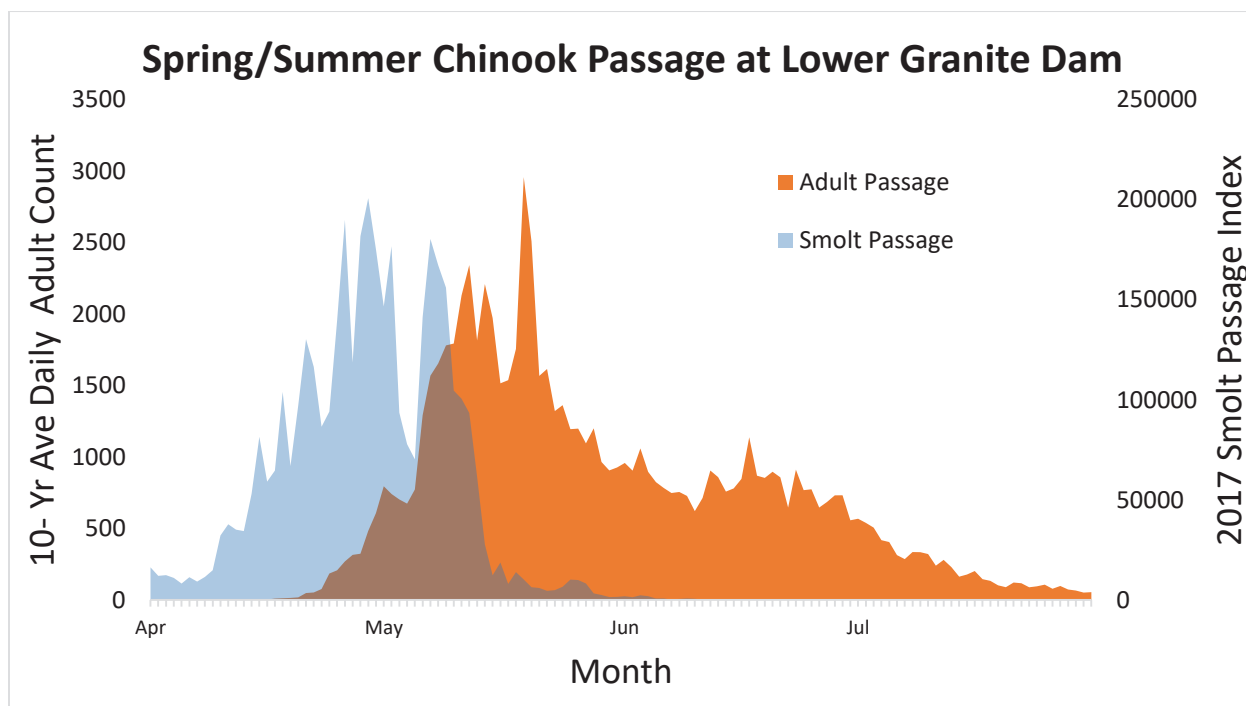


Figure 7. Passage timing and counts of adults and 2017 smolt passage index estimates of Snake River spring/summer Chinook salmon passing Lower Granite Dam (DART 2018). Data are based on adult fishway counts and juvenile fish facility sampling.

2.2.3 Snake River Fall Chinook

2.2.3.1 Listing History

NMFS listed Snake River fall-run Chinook salmon as threatened on April 22, 1992 (57 CFR 14653) and their threatened status was reaffirmed on June 28, 2005 (70 CFR 37160).

2.2.3.2 Distribution

Snake River fall Chinook salmon spawning and rearing occurs only in larger, mainstem rivers such as the Salmon, Snake River, and Clearwater River. Historically, primary fall Chinook salmon spawning areas were located on the upper mainstem Snake River (Connor et al. 2005). Presently, a series of Snake River mainstem dams block access to the upper Snake River, significantly reducing spawning and rearing habitat. The vast majority of spawning today occurs upstream of Lower Granite Dam, with the largest concentration of spawning sites in the Clearwater River, downstream from Lolo Creek.

Snake River fall Chinook do not occur above Dworshak Dam. Figure 8 shows the extent of their distribution in the Clearwater River below Dworshak Dam. It appears that the area is used as primary spawning and rearing by fall Chinook.

2.2.3.3 Life History/Biological Requirements

Currently, natural spawning is limited to the Snake River from the upper end of Lower Granite Reservoir to Hells Canyon Dam, the lower reaches of the Imnaha, Grande Ronde, Clearwater, Salmon, and Tucannon Rivers, and small areas in the tailraces of the lower Snake River hydroelectric dams (Good et al. 2005). Adult Snake River fall Chinook salmon enter the Columbia River in July and August and reach the mouth of the Snake River from the middle of August through October. Spawning occurs in the mainstem and in the lower reaches of large tributaries in October and November. Based on what is known of Upper Columbia River fall Chinook salmon, juveniles in the Snake River presumably emerge from the gravel in March and April, and downstream migration usually begins within several weeks of emergence.

Prior to alteration of the Snake River Basin by dams, fall Chinook salmon exhibited a largely ocean-type life history, where they migrated downstream and entered salt water at age 0. Today, fall Chinook salmon in the Snake River Basin exhibit one of two life histories that Connor et al. (2005) have called ocean-type and reservoir-type. The reservoir-type life history is one where juveniles overwinter in the pools created by the dams, prior to migrating out of the Snake River. The reservoir-type juveniles range up to 4 inches longer than ocean-type juveniles, and return at similar ages and sizes relative to their ocean-type cohort (Connor et al. 2005).

Fall Chinook salmon in this ESU are estimated to be approximately 60 percent ocean-type, 40 percent reservoir-type (Connor et al. 2005). Adults return to the Snake River at ages 2 through 5, with age 4 most common at spawning (Waples et al. 1991). Spawning, which takes place in October through November, occurs in the mainstem and in the lower parts of major tributaries. Juveniles emerge from the gravels in March and April of the following year and move downstream from natal spawning and early rearing areas from June through early fall. Juvenile fall-run Chinook salmon move seaward slowly as subyearlings, typically within several weeks of emergence (Waples et al. 1991).

2.2.3.4 Factors for Decline

Snake River fall Chinook salmon are believed to have once lived and spawned in the mainstem Snake River from its confluence with the Columbia River upstream to Shoshone Falls at RM 615. The spawning grounds between Huntington, Oregon (RM 328) and Auger Falls in Idaho (RM 607) were historically the most important for this species; and only limited spawning activity occurred downstream of RM 273 (Waples et al. 1991), about 1 mile below Oxbow Dam. However, development of irrigation and hydropower projects on the mainstem Snake River have inundated or blocked access to most of this area in the past century.

Construction of Swan Falls Dam (RM 458) in 1901 eliminated access to about 25 percent of potential habitat, leaving only approximately 458 miles of useable habitat.

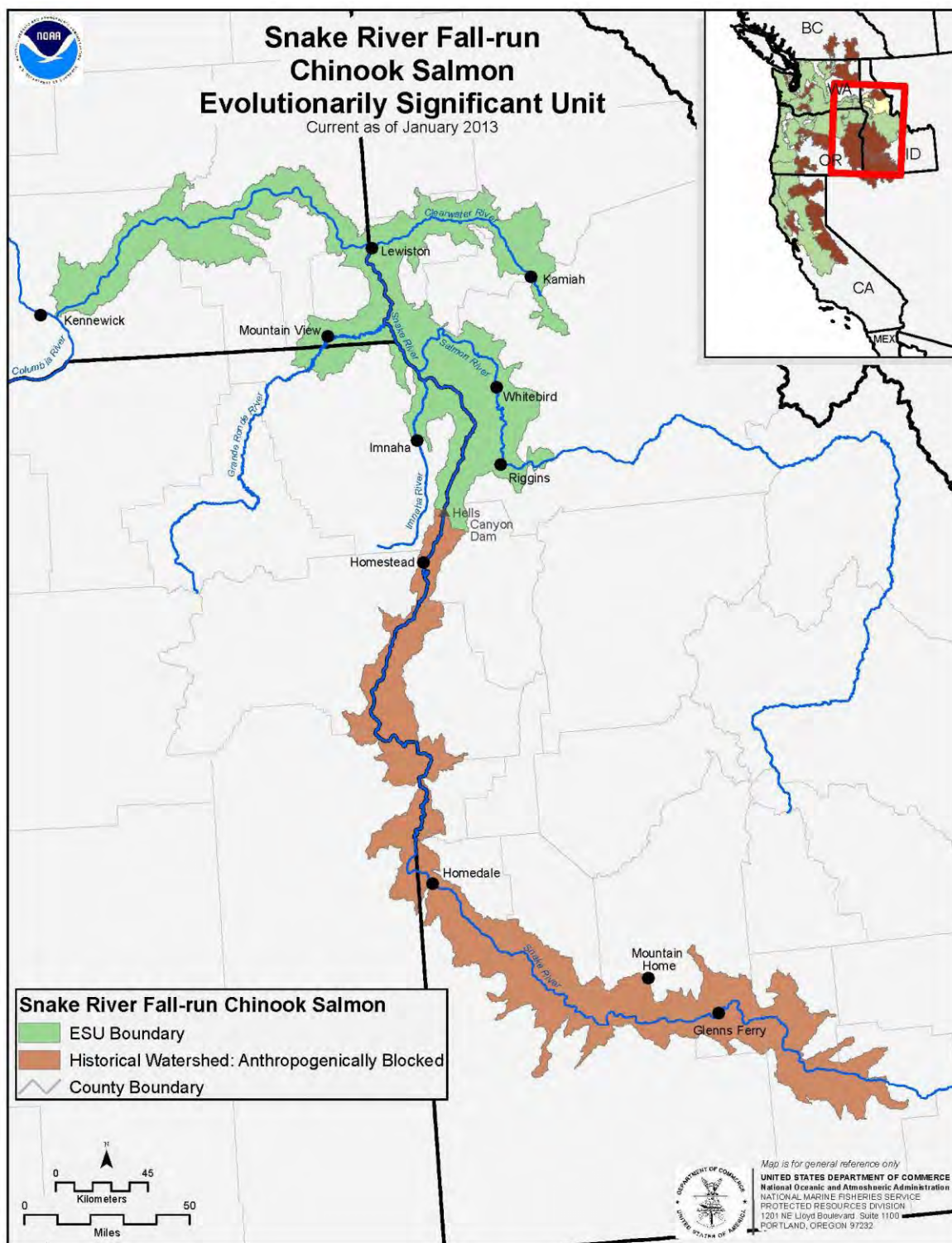


Figure 8. Snake River fall Chinook salmon distribution.

Construction of the Hells Canyon Dam complex (from 1958-1967) cut off anadromous fish access to 211 miles (46 percent) of the remaining historical fall Chinook salmon habitat upstream of RM 247. The lower Snake River Dams allow access to upriver areas, but have further changed the character of the remaining habitat.

Snake River fall Chinook salmon now have access to approximately 100 miles of mainstem Snake River habitat, which is roughly 22 percent of the 458 miles of historic habitat available prior to completion of the Hells Canyon Complex and the four lower Snake River dams. These fish are also affected by passage through dams, high water temperatures, predation and poor estuary conditions.

The loss of spawning habitat restricted the ESU to a single naturally spawning population and increased its vulnerability to environmental variability and catastrophic events. The diversity associated with populations that once resided above the Snake River dams has been lost and the impact of hatchery fish and fish from other areas straying to the spawning grounds has the potential to further compromise the genetic diversity of the ESU.

The Snake River system has contained hatchery-reared fall Chinook salmon since 1981 (Busack 1991). The hatchery contribution to Snake River Basin escapement has been estimated at greater than 47 percent (Myers et al. 1998). Artificial propagation is relatively recent, so cumulative genetic changes associated with it may be limited. Wild fish are incorporated into the brood stock each year, which should reduce divergence from the wild population. Release of subyearling fish may also help minimize the differences in mortality patterns between hatchery and wild populations that can lead to genetic change.

2.2.3.5 Local Empirical Information

Wild juvenile fall Chinook salmon typically pass through the Lower Snake River from mid-June through September, and some lingering portion of the annual migration lasting until December (Figure 9). Many of the juvenile fall Chinook salmon outmigrating from the Clearwater River and Snake Rivers spend time in shoreline areas (less than 9.8 feet in depth) in the Lower Granite reservoir and less time in downriver reservoirs, where they prefer sand-substrate areas (Bennett et al. 1997).

Trapping studies conducted in 1954 and 1955 showed that juveniles moving through the lower Snake River in March and April were less than 2 inches in length, whereas those migrating in May and June were 2.4 – 3.2 inches. Peak fry migration in the Brownlee-Oxbow Dam reach of the Snake River occurred from April through the middle of May (Waples et al. 1991).

When water temperatures reach about 70°F, these fish appear to have achieved adequate growth and fitness due to the warming conditions of these shallow-water habitat areas. They leave the shoreline areas to either continue rearing or begin their migration in the cooler pelagic zone of the reservoirs (Bennett et al. 1997). PIT tag data

suggests that some Clearwater River fall Chinook salmon migrate to the ocean as yearlings (reservoir-type), rather than as subyearlings.

Cold-water releases from Dworshak Dam, aimed at augmenting flows for adult migration, may stunt juvenile growth rates in the late summer and early fall, leading to the reservoir-type life history trait. Overwintering and early rearing of fall Chinook salmon in Lake Wallula backwater areas has been documented and it would be logical to assume that the potential for overwintering and rearing exists in the lower Snake River as well.

The low velocity and relatively fine substrate along a high percentage of the reservoir shorelines of the Lower Snake River reservoirs preclude spawning in these areas. The limited spawning that does occur is in the tailrace areas below all of the lower Snake River dams, where water velocity and substrate is suitable. Surveys conducted at Lower Monumental in 2002, 2003, and 2009 (Mueller et al. 2010), and at Lower Granite in 2002, 2003 (Mueller et al. 2009), and 2013 (Normandeau Associates 2013) documented fall Chinook redds in both locations downstream of the powerhouse and juvenile bypass system outfall pipes.

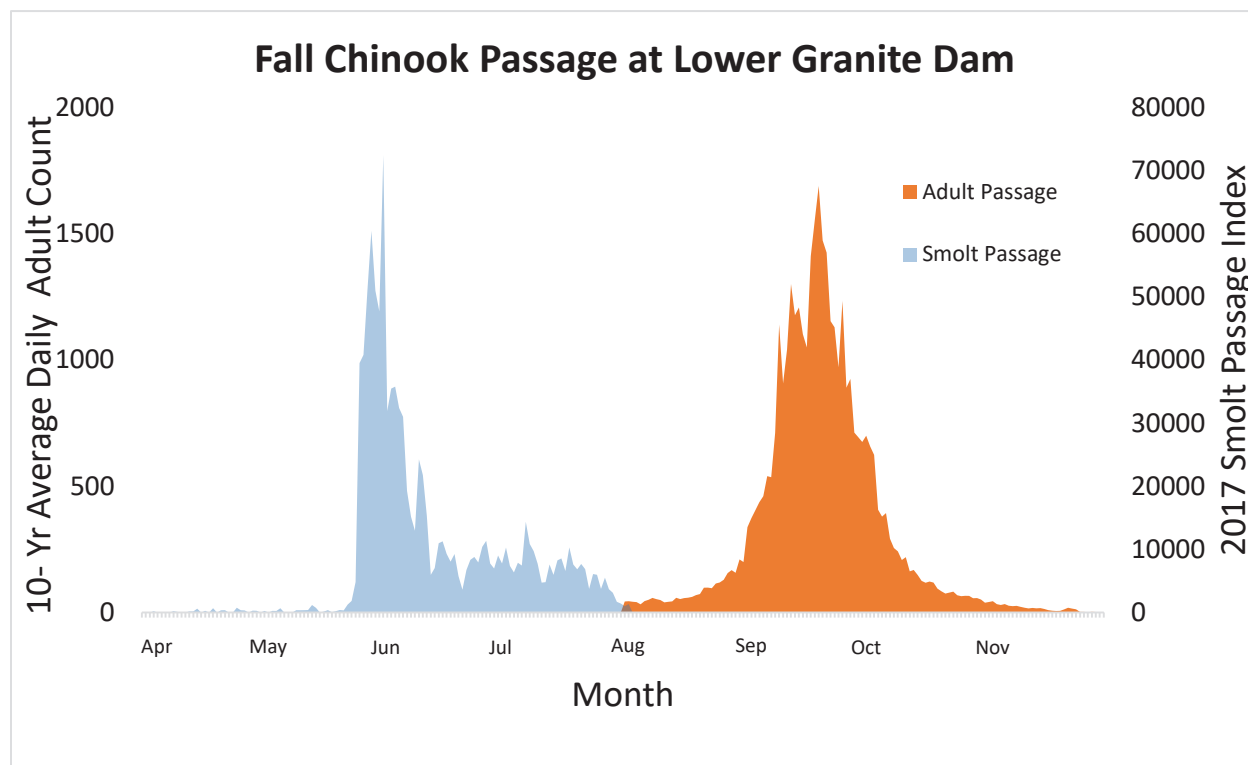


Figure 9. Passage timing and counts of adults and 2017 smolt passage index estimates of Snake River fall Chinook salmon passing Lower Granite Dam (DART 2018). Data are based on adult fishway counts and juvenile fish facility sampling.

2.2.4 Snake River Steelhead

2.2.4.1 Listing History

Snake River Basin steelhead was listed as a threatened on August 18, 1997 (62 FR 43937) and protective regulations were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Their threatened status was reaffirmed on June 28, 2005 (70 FR 37160). The distinct population segment (DPS) includes all naturally spawned steelhead populations below natural and manmade impassable barriers in streams in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho, as well as six artificial propagation programs: the Tucannon River, Dworshak National Fish Hatchery, Lolo Creek, North Fork Clearwater River, East Fork Salmon River, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs.

2.2.4.2 Distribution

The Snake River steelhead DPS is distributed throughout the Snake River drainage system, including tributaries in southwest Washington, eastern Oregon and north/central Idaho [Good et al. 2005 (Figure 10)]. Snake River Basin steelhead do not presently occur above Dworshak Dam.

The ICBTRT (2007) identified 26 populations in the following six major population groups for this species: Clearwater River, Grande Ronde River, Hells Canyon, Imnaha River, Lower Snake River, and Salmon River. The North Fork Clearwater River population in the Clearwater River is extirpated.

It has been noted that Snake River Basin steelhead remain spatially well distributed in each of the six major geographic areas in the Snake River Basin (Good et al. 2005). Environmental conditions are generally drier and warmer in these areas than in areas occupied by other steelhead species in the Pacific Northwest. Snake River Basin steelhead were blocked from portions of the upper Snake River beginning in the late 1800s and culminating with the construction of Hells Canyon Dam in the 1960s.

2.2.4.3 Life History/Biological Requirements

With one exception (the Tucannon River production area), the tributary habitat used by Snake River steelhead DPS is above Lower Granite Dam. The Interior Columbia Basin Technical Recovery Team (ICBTRT 2003) identified six major population groups in the DPS: (1) The Grande Ronde River system; (2) the Imnaha River drainage; (3) the Clearwater River drainage; (4) the Salmon River; (5) Hells Canyon; and (6) the lower Snake. The Snake River historically supported more than 55 percent of total natural-origin production of steelhead in the Columbia River Basin. It now has approximately 63 percent of the basin's natural production potential.

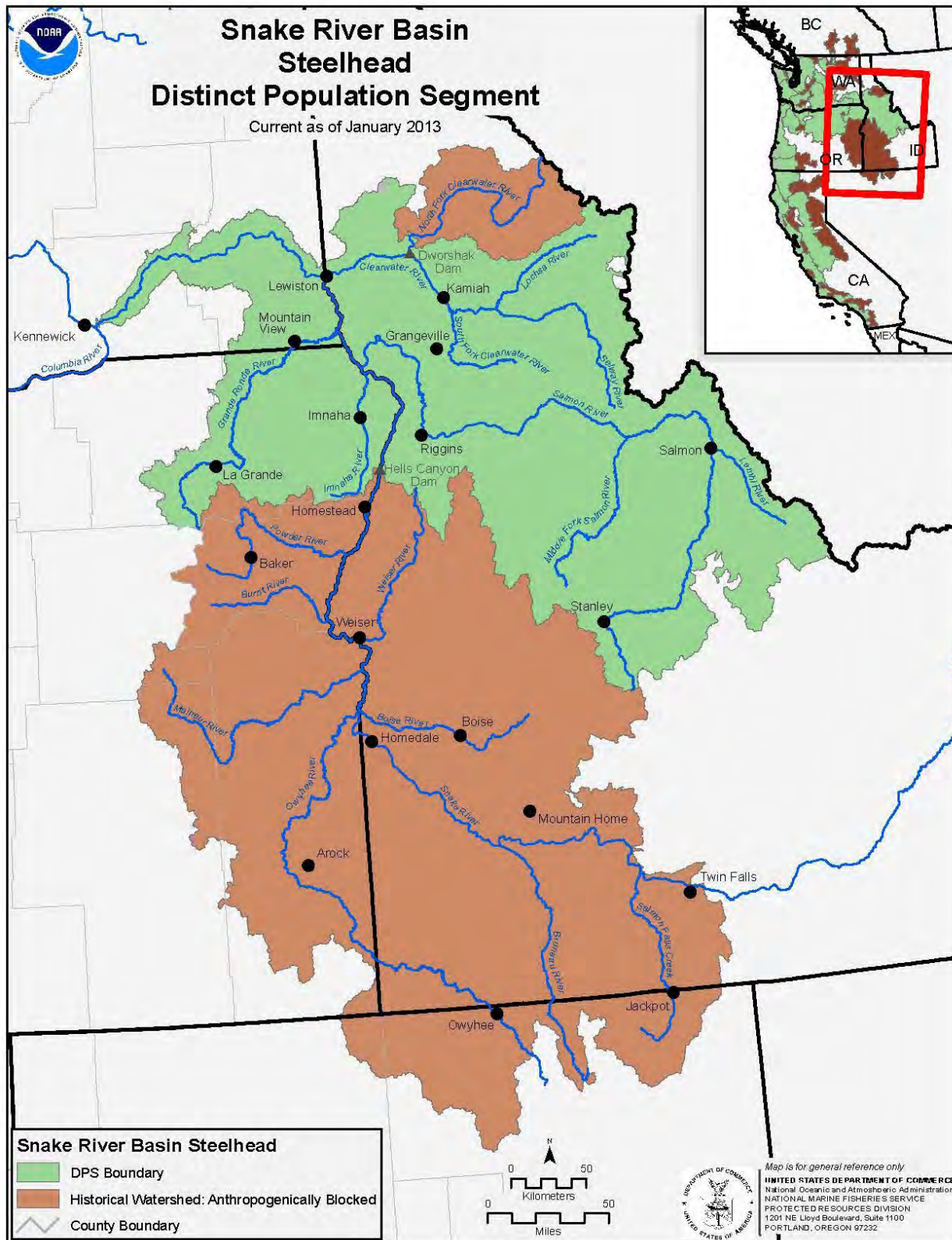


Figure 10. Snake River steelhead distribution.

Snake River Basin steelhead migrate a substantial distance from the ocean (up to 940 miles) and use high elevation tributaries (up to 6,562 feet above sea level) for spawning and juvenile rearing. Snake River steelhead occupy habitat that is considerably warmer and drier (on an annual basis) than other steelhead DPSs.

Managers classify up-river summer steelhead runs into two groups based primarily on ocean age and adult size upon return to the Columbia River. A-run steelhead are predominately age-1-ocean fish while B-run steelhead are larger, predominated by age-2-ocean fish. Snake River Basin steelhead are generally classified as summer run, based on their adult run timing pattern.

Snake River Basin steelhead enter fresh water from June to October and, after holding over the winter, spawn during the following spring from March to May. Snake River Basin steelhead usually smolt as 2- or 3-year-olds. Outmigration occurs during the spring and early summer periods, coinciding with snowmelt in the upper drainages. Hatchery steelhead trout display small peaks in arrival timing at Lower Granite and Little Goose Dams in mid-May to mid-June; however, the general trend at each dam is a protracted emigration (Blenden et al. 1996).

A-run populations are found in the tributaries to the lower Clearwater River, the upper Salmon River and its tributaries, the lower Salmon River and its tributaries, the Grand Ronde River, Imnaha River, and possibly the Snake River's mainstem tributaries below Hells Canyon Dam. B-run steelhead occupy four major subbasins, including two on the Clearwater River (Lochsa and Selway) and two of the Salmon River (Middle Fork and South Fork Salmon); areas that are for the most part not occupied by A-run steelhead.

Some natural B-run steelhead are also produced in parts of the mainstem Clearwater River and its major tributaries. There are alternative escapement objectives of 10,000 (Columbia River Fisheries Management Plan) and 31,400 (Idaho) for B-run steelhead. Therefore, B-run steelhead represent at least one-third and as much as three-fifths of the production capacity of the DPS.

Steelhead adult migration preferred temperatures are between approximately 39.2° Fahrenheit (F) and 48.2°F (Bell 1990). Steelhead preferred temperatures fall between 50.0°F and 55.4°F, while the upper lethal limit for steelhead is approximately 75°F (Spence et al. 1996).

2.2.4.4 Factors for Decline

Historic fishing pressure began the decline of salmonid populations over 100 years ago. Construction of dams, roads, railroads, and levees/shoreline protection, as well as irrigation withdrawals has altered the rearing habitat of juvenile salmon and the migratory habitat of juveniles and adults. Increased predation on juvenile salmonids due to the habitat changes is also a contributor to the declining salmonid population. Prior to the construction of the lower Snake River dams, a large percentage of the

shoreline consisted of shallow water with a small particle size substrate. Today, much of the shoreline consists of deeper water.

Hydrosystem projects create substantial habitat blockages in this ESU; the major ones are the Hells Canyon Dam complex (mainstem Snake River) and Dworshak Dam (North Fork Clearwater River). Minor blockages are common throughout the region. Habitat in the Snake River Basin is warmer and drier and often more eroded than elsewhere in the Columbia River Basin or in coastal areas. The reduced amount of suitable habitat may be the main factor limiting steelhead recovery.

2.2.4.5 Local Empirical Information

Very little information is documented on near-shore habitat use by juvenile steelhead in the mainstem Columbia and Snake Rivers. Juvenile steelhead are thought to utilize the deeper, higher velocity areas away from the shoreline to migrate. They could potentially use the shoreline area during the winter and spring for rearing.

Most wild adult steelhead typically migrate through the reach between June and August for the A-run and between late August and November for the B-run (Figure 11). Adults from this stock may be migrating in deeper water or individuals may be holding in mid-channel areas prior to moving upriver into tributaries for spawning in early spring.

Wild juvenile Snake River steelhead generally migrate downstream through the lower Snake River, mainly between late March and the end of June (Figure 11). Some rearing or overwintering may occur in the reservoirs.

Steelhead adult returns to Lower Granite Dam fluctuated widely in the 1980s and remained at relatively low levels through the 1990s. Documenting wild steelhead counts began in 1994 and show a marked increase in 2001. Since 2000, counts have remained higher than during the 1990s with peaks and troughs in returns. Wild steelhead returns decreased substantially since 2014 with slightly more than 20,000 fish passing McNary Dam in 2017, approximately 13,000 of which were subsequently counted passing Ice Harbor Dam.

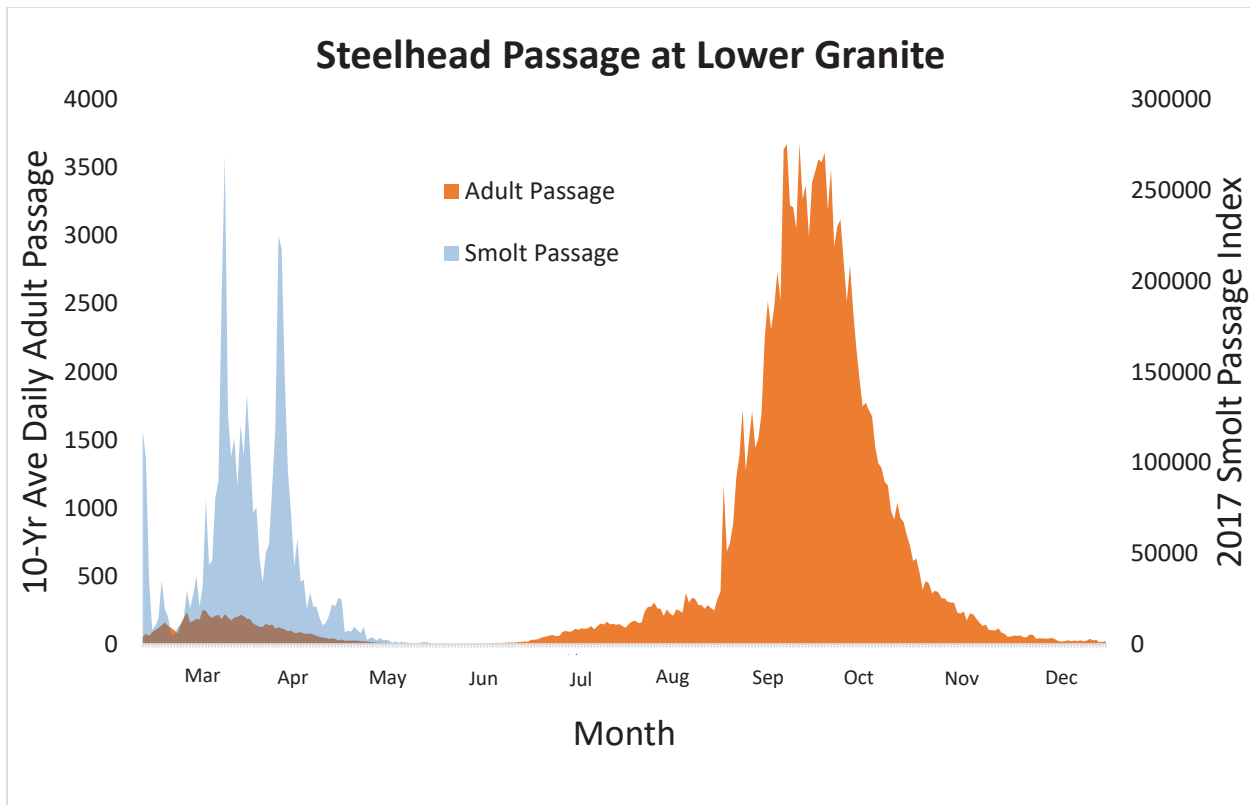


Figure 11. Passage timing and counts of adults and 2017 smolt passage index estimates of Snake River steelhead passing Lower Granite Dam (DART 2018). Data are based on adult fishway counts and juvenile fish facility sampling.

2.2.5 Bull Trout

2.2.5.1 Listing History

The USFWS issued a final rule listing the Columbia River population of bull trout as threatened on June 10, 1998 (63 FR 31647), while critical habitat for this species was listed on September 30, 2010. Bull trout are currently listed throughout their range in the United States as a threatened species.

2.2.5.2 Life History/Biological Requirements

Individual bull trout may exhibit resident or migratory life history strategies. Resident bull trout carry out their entire life cycle in the stream in which they spawn and rear. Migratory bull trout spawn in tributary streams, but eventually travel to larger streams (or lakes) where they mature. Habitat components that appear to influence bull trout distribution and abundance include water temperature, cover, channel form and stability, valley form, spawning and rearing substrates and migratory corridors (with resting habitat). All life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders and deep pools.

Bull trout normally reach maturity in four to seven years and may live as long as twelve years. Migratory bull trout may travel over one hundred miles to their spawning grounds. They generally spawn from August to November during periods of decreasing water temperatures. Egg incubation is normally 100 to 145 days and fry remain in the substrate for several months.

Bull trout are opportunistic feeders. Their diet requirements vary depending on their size and life history strategy. Juvenile bull trout prey on insects, zooplankton and small fish while adults and migratory bull trout are dominantly piscivorous.

2.2.5.3 Distribution

In the Columbia River Basin, bull trout historically were found in about 60% of the basin. They now occur in less than half of their historic range (Figure 12). Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada.

2.2.5.4 Local Empirical Information

The few remaining bull trout strongholds in the Columbia River Basin tend to be found in large areas of contiguous habitats in the Snake River basin of the central Idaho mountains, upper Clark Fork and Flathead Rivers in Montana, and several streams in the Blue Mountains in Washington and Oregon. Populations also exist in the Yakima and Methow River watersheds. Numbers of bull trout captured at spawning stations throughout the basin are also regularly recorded. In addition, redd counts are conducted in southeast Washington on the Tucannon River, Butte Creek, and Asotin Creek.

There are eight subbasins of the lower Snake River identified by the USFWS that contain bull trout (Barrows et al. 2015). Of these subbasins, the Tucannon River (WA), Imnaha River (OR), and Sheep Creek (ID) have migratory bull trout populations that utilize the lower Snake River, generally between October and March, before returning to spawning grounds. Four Tucannon River fish have been detected in the adult fishway at Lower Granite between the months of June and August; however, there is no documented interaction of Imnaha River or Sheep Creek bull trout with the lower Snake River dams (Barrows et al. 2015). There is no evidence of bull trout utilizing the lower Snake River from the Asotin Creek, Grande Ronde River, Clearwater River, Salmon, River, or Granite Creek subbasins, although bull trout migration from some of these subbasins has not been well studied.

Recent studies have also shown Walla Walla River subbasin bull trout migration to, from, and through Lake Wallula above McNary Dam, but very little is known about how many bull trout may migrate into or through the mainstem Columbia and Snake River throughout the year. Anglin et al. (2010) reported that bull trout dispersed into the mainstem Columbia River from the Walla Walla River, and at times, this dispersal included a relatively long migration upstream to Priest Rapids Dam and downstream to John Day Dam.

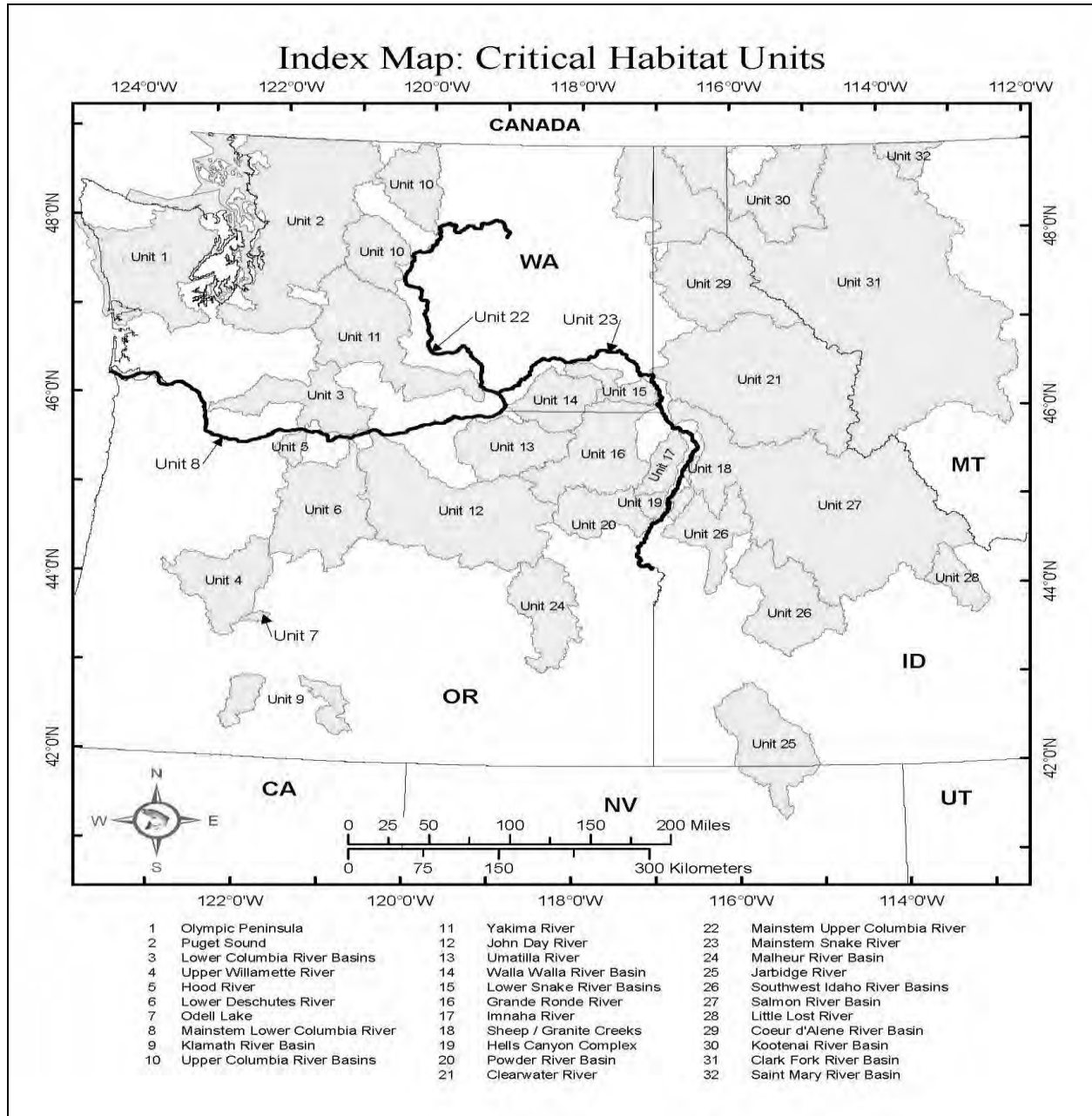


Figure 12. Bull trout distribution in the Columbia River Basin (USFWS 2014).

This data suggests that migratory bull trout from the Walla Walla River subbasin may also utilize the lower Snake River as bull trout of unknown origin are occasionally documented in the Ice Harbor south shore fishway (Barrows et al. 2015). While there is clear evidence that migratory bull trout utilize the lower Snake River and interact with Federal Columbia River Power System dams, little is known about the number of bull trout within the action area at Lower Granite at any given time, but numbers are expected to be very low based on fishway count data (Table 3). Furthermore, only four bull trout have been documented by the Smolt Monitoring Program at Lower Granite since 1998 (FPC 2017).

Table 3. Total number of bull trout observed passing the adult ladder at Lower Granite Dam monthly and annually since 2006. Length estimates were provided from ladder counts and used to estimate age class. Bull trout smaller than 12 inches in length were assumed to be sub-adult (Anglin et al. 2010). No bull trout were counted in August or September across years.

Year	# Bull Trout Observed	Adults	Sub-Adults	Monthly Observations			
				April	May	June	July
2006	2	1	1			1	1
2007	8	4	4	3	1	4	
2008	8	7	1		1	4	3
2009	4	4			2	2	
2010	8	8			2	1	5
2011	1	1					1
2012	2	2			1	1	
2013	0						
2014	1		1	1			
2015	0						
2016	7	-	-	1	1	5	
Total	41	28	8	5	8	18	10

2.2.5.5 Ongoing Monitoring

Adult salmonid passage is monitored at Lower Snake River dams between March and November, and for juveniles between April and October each year. Any bull trout observations are recorded, though few, if any, are generally seen in any year.

2.2.6 Yellow-Billed Cuckoo

2.2.6.1 Listing History

The western yellow-billed cuckoo was listed as threatened 3 October, 2014 (79 FR 59991), while critical habitat was proposed August 15, 2014, but a final designation has not been made. The western DPS includes Arizona, California (Baja California, Baja California Sur, Chihuahua, western Durango, Sinaloa, and Sonora), western Colorado, Idaho, western Montana, western New Mexico, Nevada, Oregon, western Texas, Utah, Washington, western Wyoming, and southwest British Columbia.

2.2.6.2 Life History and Biological Requirements

As summarized by Cornell University (2017): Yellow-billed cuckoos use wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes. In the Midwest, look for cuckoos in shrublands of mixed willow and dogwood, and in dense stands of small trees such as American elm. In the Southwest, yellow-billed cuckoos are rare breeders in riparian woodlands of willows, cottonwoods and dense stands of mesquite to breed.

Yellow-billed cuckoo prey largely on caterpillars. On the east coast, periodic outbreaks of tent caterpillars draw cuckoos to the tent-like webs, where they may eat as many as 100 caterpillars at a sitting. Fall webworms and the larvae of gypsy, brown-tailed, and white-marked tussock moths are also part of the cuckoo's lepidopteran diet, often supplemented with beetles, ants, and spiders. They also take advantage of the annual outbreaks of cicadas, katydids, and crickets, and will hop to the ground to chase frogs and lizards. In summer and fall, cuckoos forage on small wild fruits, including elderberries, blackberries and wild grapes. In winter, fruit and seeds become a larger part of the diet.

Pairs may visit prospective nest sites multiple times before building a nest together. Nest heights can range from 3 feet to as much as 90 feet off the ground, with the nest placed on a horizontal branch or in the fork of a tree or large shrub. In the central and eastern U.S., Yellow-billed cuckoo nest in oaks, beech, hawthorn, and ash. Pine, juniper, and fir are used less frequently. In the West, nests are often placed in willows along streams and rivers, with nearby cottonwoods serving as foraging sites.

The male and female yellow-billed cuckoo build a loose stick nest together, using twigs collected from the ground or snapped from nearby trees and shrubs. They construct a flat, oblong platform reaching up to 5 inches deep and 8 inches in diameter. The pair may line the nest sparingly with strips of bark or dried leaves. The finished nest cup is about 5 inches across and 1.5 inches deep. The male sometimes continues bringing in nest materials after incubation has begun. Clutch size can range from 1-5 eggs with up to 2 clutches per year.

2.2.6.3 Distribution

The breeding range of the yellow-billed cuckoo formerly included most of North America from southern Canada to the Greater Antilles and northern Mexico [AOU 1957, 1998 (Figure 13)]. In recent years, the species' distribution in the west has contracted. The northern limit of breeding in the western coastal States is now in Sacramento Valley, California, and the northern limit of breeding in the western interior States is southern Idaho (AOU 1998; Hughes 1999). East of the Continental Divide, the species breeds from southeastern Montana, the Dakotas, Minnesota, southern Ontario, southeastern Quebec and probably southern New Brunswick south to eastern Colorado, Texas, the

Gulf coast, northeastern Mexico, the Florida Keys, the Greater Antilles and the northern Lesser Antilles (AOU 1957, 1998). The species overwinters from Columbia and Venezuela, south to northern Argentina (Ehrlich et al. 1992; AOU 1998).

2.2.6.4 Local Empirical Information

In the Pacific Northwest, the species was formerly fairly common locally in willow bottoms along Willamette and Columbia Rivers in Oregon, and in the Puget Sound lowlands and along the lower Columbia River in Washington (Marshall 1996; Roberson 1980; Jewett et al. 1953; Gabrielson and Jewett, 1940). The species was rare east of the Cascade Mountains in these states and provinces. The last confirmed breeding records were in the 1930s in Washington, and in the 1940s in Oregon. It may now be extirpated from Washington (66 FR 38614).

2.2.6.5 Factors for Decline

Available data suggests that the yellow-billed cuckoo's range and population numbers have declined substantially across much of the western United States over the last 50 years. Analysis of population trends is difficult because quantitative data, including historical population estimates, are generally lacking. However, historic and recent data are sufficient to allow an evaluation of changes in the species' range in the western United States.

The greatest threat to the species has been reported to be loss of riparian habitat. It has been estimated that 90 percent of the cuckoo's stream-side habitat has been lost (USFWS 2018). Habitat loss in the west is attributed to agriculture, dams, and river flow management, overgrazing and competition from exotic plants such as tamarisk.

2.2.6.6 Ongoing Monitoring

Some western states and entities continue to monitor yellow-billed cuckoo populations with at least two relatively recent efforts. The Bureau of Reclamation has a contracted a five year study in Colorado beginning in 2013 (Tracy and McNeil 2016). The Arizona Important Bird Areas Program conducted 22 survey routes in 2017 within the Santa Catalina, Rincon, Tumacacori, Santa Rita, and Chiricahua Mountains.

The Corps does not actively monitor yellow-billed cuckoo, but Corps biologists conduct surveys prior to construction activities in the Pacific Northwest. A 2015 Corps survey in Jackson Hole, Wyoming, determined yellow-billed cuckoo were present in the cottonwood riparian along the Snake River. No nesting activity was documented.

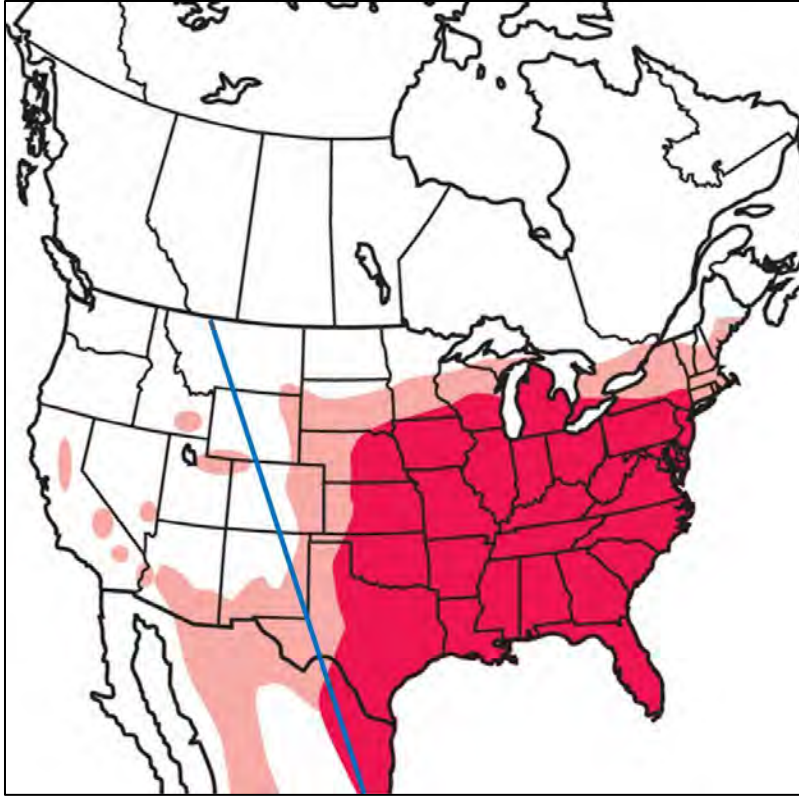


Figure 13. Yellow-billed cuckoo distribution in the North America (Audubon 2018). The blue line and areas west represent an arbitrary approximation of the western DPS. Light pink shading represents “uncommon” breeding areas.

2.2.7 Spalding’s Catchfly

2.2.7.1 Listing History

Spalding’s catchfly was listed as a threatened species under the Endangered Species Act on October 10, 2001 (66 FR 51597). On October 12, 2007 a recovery plan for Spalding’s catchfly was completed and released to the public. Spalding’s catchfly has been assigned a recovery priority number of 8C on a scale from 1C (highest) to 18 (lowest), indicating its taxonomic status as a full species, a moderate degree of threats or impacts, high potential for recovery, and potential conflict with economic activities.

2.2.7.2 Life History and Biological requirements

Spalding’s catchfly is an herbaceous perennial plant in the pink family (Caryophyllaceae). It is a long-lived species that expresses prolonged dormancy for up to six years without leaves if conditions are unfavorable (Lesica 1997; Lesica and Crone 2007). Lesica and Crone (2007) found that prolonged dormancy may increase plant fitness providing a way to obtain below-ground resources, limiting flower and fruit production.

Little is known about seed productivity, seed bank viability, or dispersal, but it can be assumed that the capsules of Spalding's catchfly serve as an open cup from which seeds are likely carried by the wind, jostled out by passing wildlife, or tossed when plants are knocked over (USFWS 2007). Seeds are small, flat, and somewhat winged. Plant height and seed characteristics suggest that short-distance wind dispersal may be common.

The plant is found at elevations ranging from 1,200 to 5,300 feet, usually in deep, productive loess soils (fine, windblown soils). Plants are generally found in swales or on northwest to northeast facing slopes where soil moisture is relatively higher.

2.2.7.3 Distribution

In 2007 there were 99 documented populations of Spalding's catchfly (USFWS 2007). Within the United States, Spalding's catchfly is known from four counties in Idaho (Idaho, Latah, Lewis, and Nez Perce), four counties in Montana (Flathead, Lake, Lincoln, and Sanders), one county in Oregon (Wallowa), and five counties in Washington (Adams, Asotin, Lincoln, Spokane, and Whitman) (Mincemoyer 2005; Oregon Natural Heritage Program 2006; Idaho Conservation Data Center 2007; Montana Natural Heritage Program 2007; Washington Natural Heritage Program 2007; summarized in USFWS 2007).

Two element occurrence records of Spalding's catchfly are known in British Columbia, Canada, both are within 1 mile of plants in Montana (British Columbia Conservation Data Center 2007), therefore we consider these plants to be within one single population. Figure 14 depicts the current rangewide distribution of Spalding's catchfly.

The distribution and habitat of Spalding's catchfly are primarily restricted to mesic slopes, flats or depressions in grassland, sagebrush-steppe, or open pine forest vegetation dominated by native perennial grasses such as *Festuca idahoensis* (Idaho fescue) or *F. scabrella* (rough fescue). Within its range, Spalding's catchfly occurs within five physiographic (physical geographic) regions: the Palouse Grasslands in west-central Idaho and southeastern Washington; the Channeled Scablands in eastern Washington; the Blue Mountain Basins in northeastern Oregon; the Canyon Grasslands of the Snake River and its tributaries in Idaho, Oregon, and Washington; and the Intermontane Valleys of northwestern Montana [USFWS 2007 (Figure 14)].

2.2.7.4 Local Empirical Information

The USFWS (2007) estimated 35 known populations in the state of Washington, which may have fluctuated due to increased survey effort since the drafting the Spalding's catchfly Recovery Plan. It is unknown how extensive or numerous the plant may have been historically because areas such as the Palouse Grasslands, centered around Pullman, Washington, and Moscow, Idaho, underwent a rapid and extensive conversion to agricultural lands around 1880 prior to significant botanical surveys of the area (USFWS 2007).

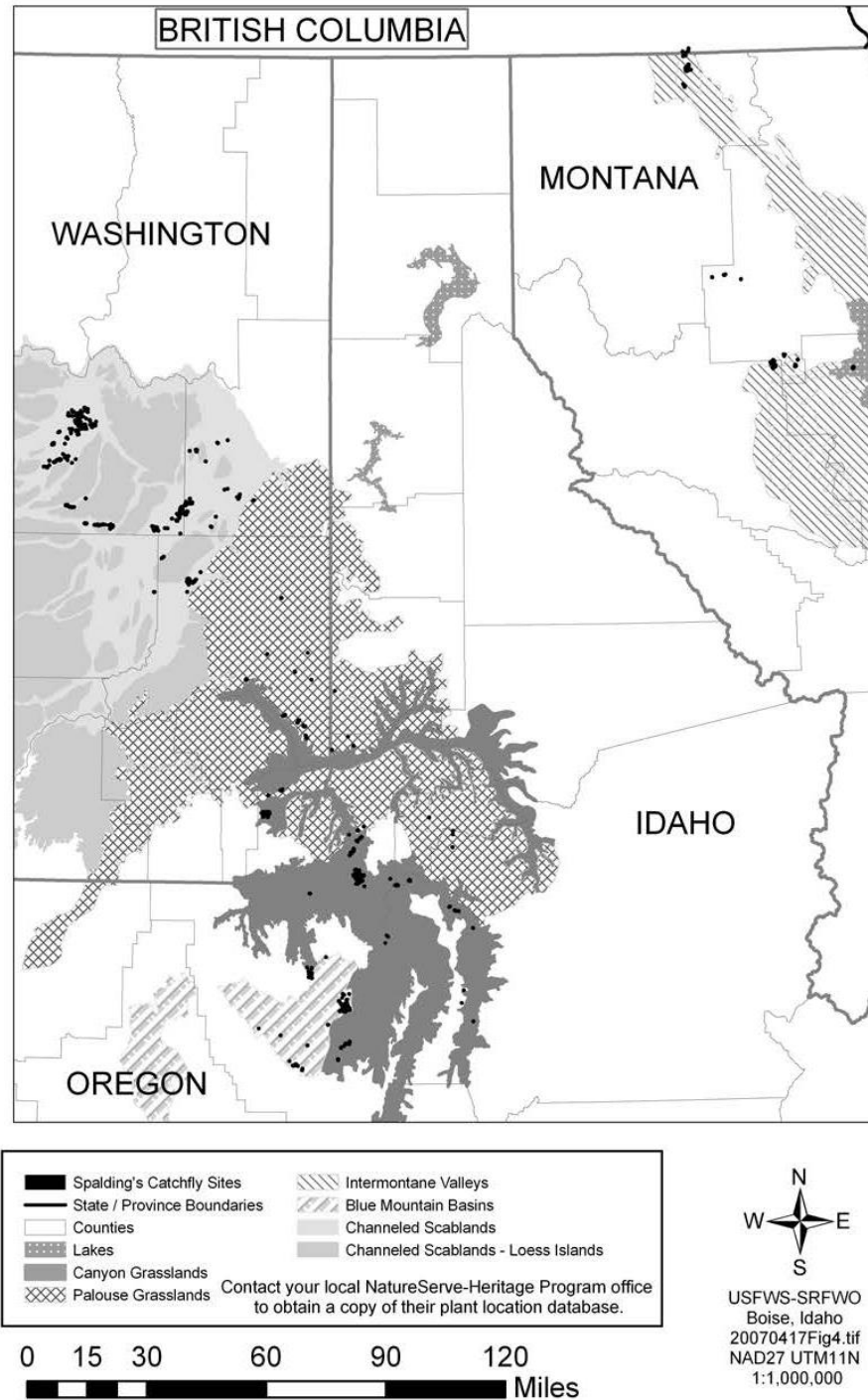


Figure 14. Distribution of Spalding’s catchfly (USFWS 2007).

It is estimated that more than 99 percent of the original Palouse Prairie and 47 percent of the Channeled Scablands habitat has been lost (Noss et al. 1995).

No Spalding’s catchfly were found on any Corps lands between Lyon’s Ferry (RM 59) upstream to Asotin Slough (RM 147), and upstream of the confluence of the Snake and

Clearwater rivers to RM 8.2 on the Clearwater during a 2008 vascular plant survey on Corps lands in the upper Snake River (Bailey 2008a, 2008b).

2.2.7.5 Factors for Decline

Spalding's catchfly continues to be impacted by habitat loss due to human development and agriculture, habitat degradation associated with adverse grazing and trampling by domestic livestock, and invasions of aggressive nonnative plants. Other impacts include changes in fire frequency and seasonality, off-road vehicle use, and herbicide spraying and drift.

2.2.7.6 Ongoing Monitoring

The Corps conducts noxious weed and rare plant surveys within HMUs annually, although not every HMU is surveyed each year. To date, Spalding's catchfly has not been positively identified on Corps lands within the action area (Trumbo 2017).

2.3. Status of Critical Habitat

2.3.1 Anadromous Species

The designating of critical habitat focuses on certain habitat features called "physical and biological features" (PBFs) that are essential to support one or more of the salmonid life stages. The PBFs for ESA-listed salmon and steelhead in the action area are broken into two groups relative to fresh or saltwater based on these life history requirements (Table 4).

2.3.1.1 Snake River Spring/Summer Chinook salmon

Critical habitat was originally designated December 28, 1993, for spring/summer Chinook to include all presently or historically accessible stream reaches in the Hells Canyon, Imnaha, Lemhi, Little Salmon, Lower Grande Ronde, Lower Middle Fork Salmon, Lower Salmon, Lower Snake-Asotin, Lower Snake-Tucannon, Middle Salmon-Chamberlain, Middle Salmon-Panther, Pahsimeroi, South Fork Salmon, Upper Middle Fork Salmon, Upper Grande Ronde, Upper Salmon, Wallowa subbasins, and the Columbia River and Snake River migration corridor. A map of Snake River spring/summer Chinook salmon Critical Habitat is not currently available.

2.3.1.2 Snake River Fall Chinook Salmon

Critical habitat was originally designated December 28, 1993, for Snake River fall Chinook. Critical habitat includes the lower Columbia and Snake Rivers, middle and upper Snake River, and accessible Snake River tributaries (Figure 15). The mainstem Snake River includes a 300-foot riparian buffer above the ordinary high water mark on both shorelines as critical habitat. Essential habitat elements for Snake River fall Chinook are found in Table 4.

Table 4. Physical and biological features of critical habitat designated for anadromous species, and corresponding species life history events.

Physical and Biological Features		
Site Type	Site Attribute	Life History Event
Freshwater spawning	Substrate, water quality, water quantity	Adult spawning, embryo incubation, alevin development
Freshwater rearing	Floodplain connectivity, forage, natural cover, water quality, water quantity	Fry emergence, fry/parr growth and development
Freshwater migration	Free of artificial obstructions, natural cover, water quality, water quantity	Adult sexual maturation, adult upstream migration and holding, kelt seaward migration, fry/parr seaward migration
Estuarine areas	Forage, free of obstruction, natural cover, salinity, water quality, water quantity	Adult sexual maturation, adult "reverse smoltification", kelt seaward migration, fry/parr seaward migration, fry/parr smoltification, smolt growth and development, smolt seaward migration
Nearshore marine areas	Forage, free of obstruction, natural cover, water quality, water quantity	Adult sexual maturation, smolt/adult transition
Offshore marine areas	Forage	Adult growth and development

2.3.1.3 Snake River Sockeye Salmon

Critical habitat was originally designated December 28, 1993, for Snake River sockeye and includes all rivers, lakes, and reaches presently or historically accessible lakes and stream reaches in the Lower Salmon, Lower Snake, Lower Snake-Asotin, Lower Snake-Tucannon, Middle Salmon-Chamberlain, Middle Salmon-Panther, and Upper Salmon subbasins, as well as the migration corridor through the Salmon, Snake, and Columbia Rivers. A map of Snake River sockeye salmon Critical Habitat is not currently available. Essential elements of Snake River sockeye salmon critical habitat are found in Table 4.

2.3.1.4 Snake River Steelhead

NMFS designated critical habitat for Snake River steelhead September 2nd, 2005, for Snake River Steelhead to include Hells Canyon, Imnaha River, Lower Snake/Asotin,

Upper Grande Ronde River, Wallowa River, Lower Grande Ronde, Lower Snake/Tucannon, Upper Salmon, Pahsimeroi, Middle Salmon-Panther, Lemhi, Upper Middle Fork Salmon, Lower Middle Fork Salmon, Middle Salmon-Chamberlain, South Fork Salmon, Lower Salmon, Little Salmon, Upper Selway, Lower Selway, Lochsa, Middle Fork CR, South Fork CR, and CR subbasins, and the Lower Snake/Columbia River migration corridor (NMFS 2005) (Figure 16). Essential elements of Snake River steelhead critical habitat are found in Table 4.

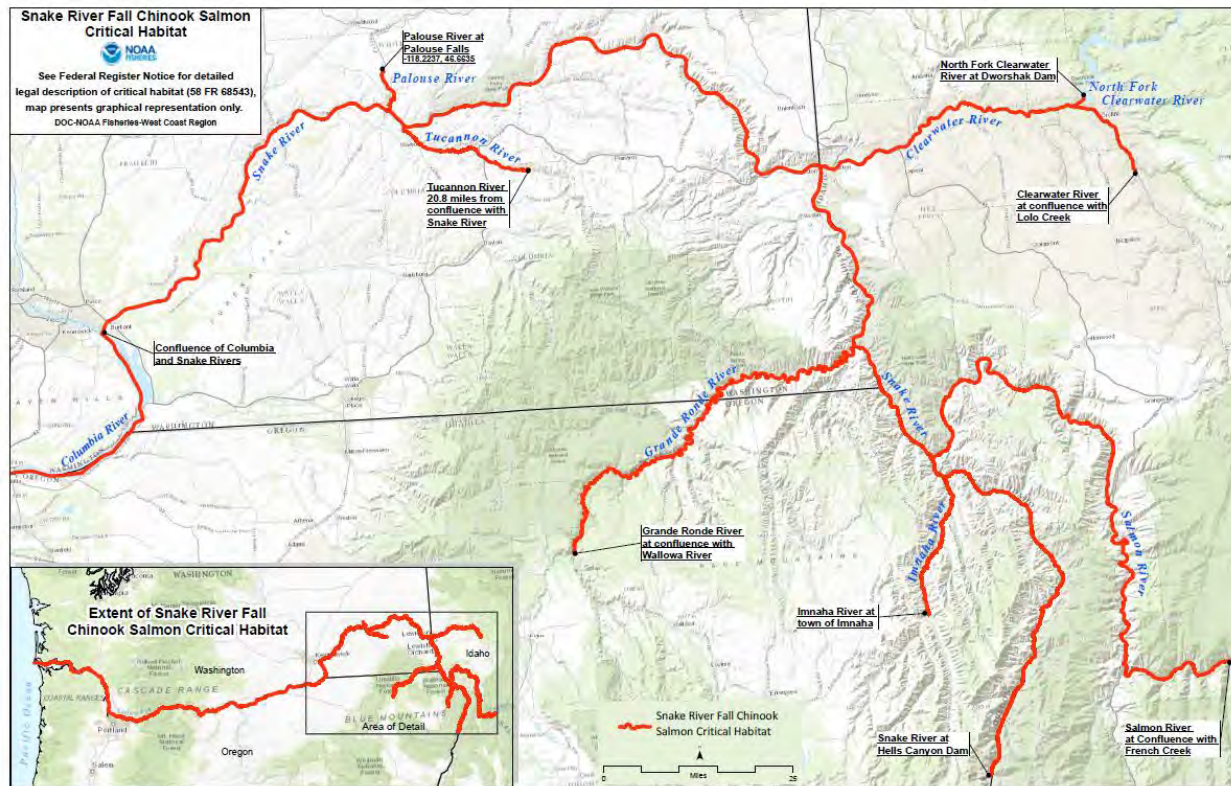


Figure 15. Snake River fall Chinook salmon Critical Habitat.



Critical Habitat
Snake River Basin Steelhead

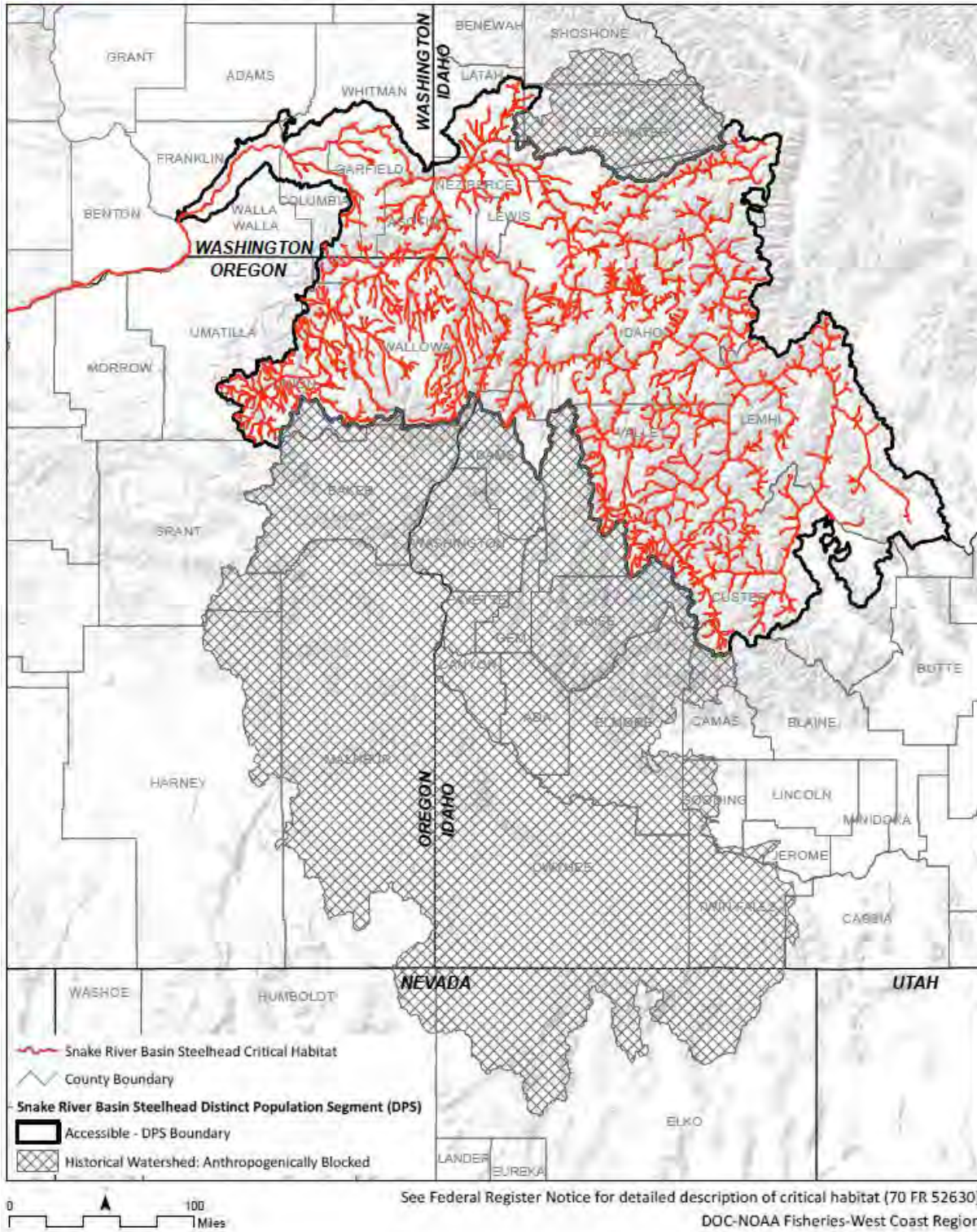


Figure 16. Snake River steelhead Critical Habitat. Not pictured is the lower Columbia River migration corridor which extends to the estuary.

2.3.2 Bull Trout

Bull trout critical habitat was designated in 2005. The USFWS revised the designation in 2010. A final rule was published on October 18, 2010, and took effect on November 17, 2010. A total of 19,729 miles of stream and 488,251 acres of reservoirs and lakes are designated as bull trout critical habitat (Figure 17). The Snake, Columbia, Yakima, and Walla Walla Rivers, which encompass the action area, are designated as bull trout critical habitat. Physical and Biological Features for bull trout critical habitat are listed in Table 5.

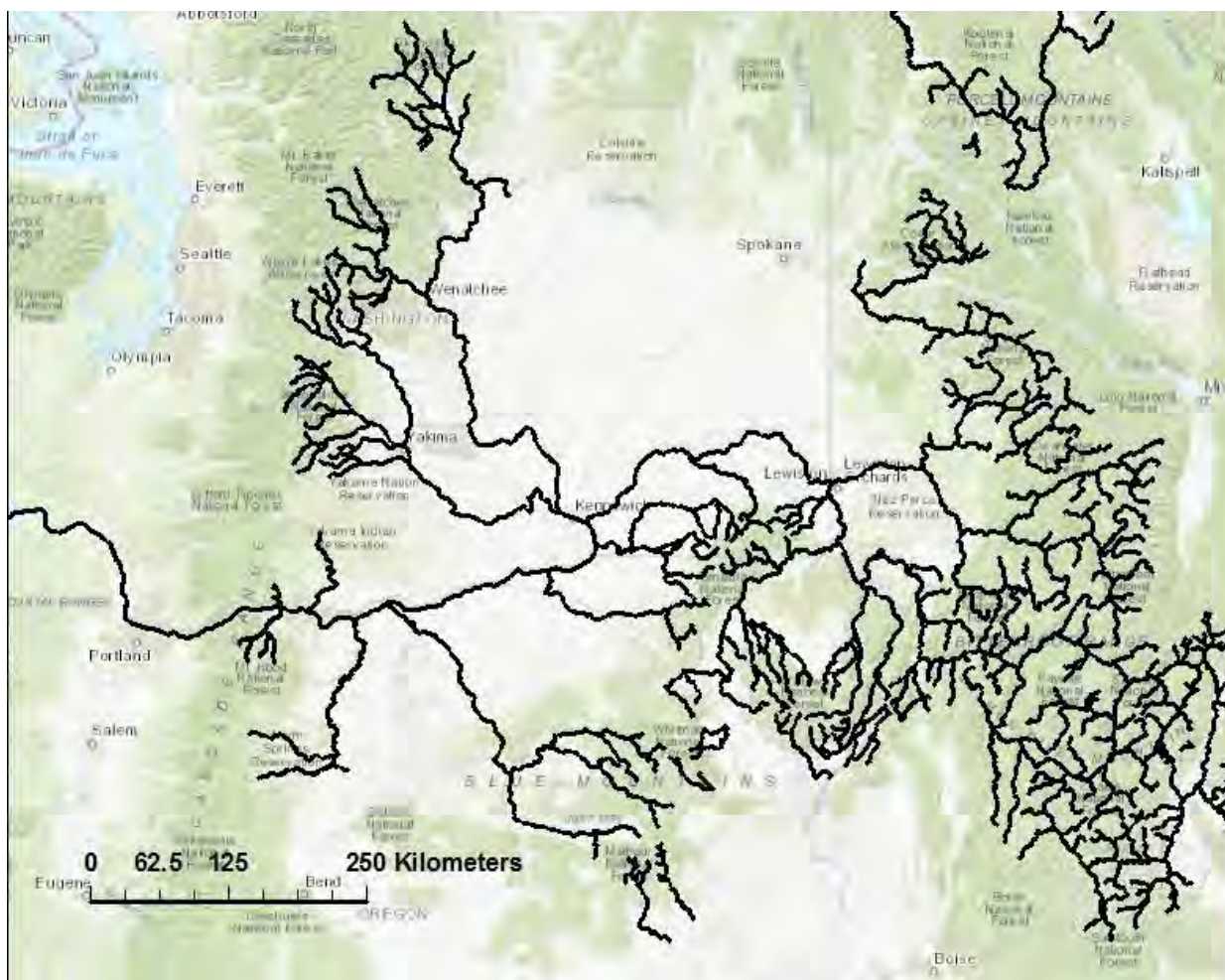


Figure 17. Bull trout critical habit in the Columbia River Basin.

Table 5. Physical and Biological Features of critical habitat designated for bull trout.

PBFs		
1	Water Quality	Springs, seeps, groundwater sources, and subsurface water connectivity (hyporehic flows) to contribute to water quality and quantity and provide thermal refugia.
2	Migration Habitat	Migration habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.
3	Food Availability	An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.
4	Instream Habitat	Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these environments, with features such as large wood, side channels, pools, undercut banks and clean substrates, to provide a variety of depths, gradients, velocities, and structure.
5	Water Temperature	Water temperatures ranging from 2 to 15 °C (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.
6	Substrate Characteristics	In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable to bull trout will likely vary from system to system.
7	Stream Flow	A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.
8	Water Quantity	Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.
9	Nonnative Species	Sufficiently low levels of occurrence of nonnative predatory (e.g., lake trout, walleye, northern pike, smallmouth bass); interbreeding (e.g., brook trout); or competing (e.g., brown trout) species that, if present, are adequately temporally and spatially isolated from bull trout.

2.3.3 Yellow-billed Cuckoo and Spalding’s Catchfly

Yellow-billed cuckoo critical habitat has been proposed, but is not located in the action area.

There is no designated critical habitat for Spalding’s catchfly.

3 Environmental Baseline

This section is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat), and ecosystem within the action area. The environmental baseline is a “snapshot” of a species’ health at a specified point in time. It does not include the effects of the action under review in the consultation.

The baseline includes State, tribal, local, and private actions already affecting the species or that will occur contemporaneously with the consultation in progress. Unrelated Federal actions affecting the same species or critical habitat that have completed formal or informal consultation are also part of the environmental baseline, as are Federal and other actions within the action area that may benefit listed species or critical habitat.

3.1. Historic Conditions

The action area was dominantly shrub-steppe and grasslands, historically, which were likely comprised of a greater density of native plant species than the present condition. Prior to construction of Lower Granite Dam, the action area would have had a small floodplain, although this area of the Snake River is characterized by steep canyon bluffs. At some time in the past, much of the action area was likely used for cattle grazing.

Recreation and habitat sites along the shoreline, which currently provide riparian habitat, were developed for their respective uses after the completion of Lower Granite Dam and the Comp Plan over forty years ago. The development and management of these areas is considered part of the environmental baseline.

3.2. Current Conditions

The Snake River shoreline is now generally vegetated with a variety of trees and shrubs within the action area. Corps wildlife lands provide undeveloped habitat; however, the corridor is heavily disturbed and developed in some urban areas. The action area encompasses the towns of Lewiston, Idaho, and Clarkston, Washington.

3.3. Matrix of Pathways and Indicators

NMFS uses the "Matrix of Pathways and Indicators" (MPI) to summarize important environmental parameters and levels of condition for each. USFWS adopted a similar strategy in 1997 based on NMFS’ matrix. The NMFS matrix is divided into six overall pathways (major rows in the matrix):

- Water Quality
- Channel Condition and Dynamics

- Habitat Access
- Flow/Hydrology
- Habitat Elements
- Watershed Conditions

Each represents a significant pathway by which actions can have potential effects on anadromous salmonids and their habitats, and could be used for analyzing bull trout habitat as well.

There has not been an action area-wide evaluation of current habitat indicators using the MPI for this project; however, after review of the proposed land use classification changes, the matrix may be used to determine the potential impacts of the proposed action. The Corps has determined that streambank condition and riparian reserves maybe improved by the proposed action, but at a minor scale within the watershed. Under the worst case scenario, the proposed action will not restore or degrade the function of habitat indicators of the environmental baseline, but will maintain existing baseline conditions within the action area (Table 6). For the purposes of the MPI checklist, "maintain" means that the function of an indicator does not change (i.e., it applies to all indicators regardless of functional level). Each indicator will be discussed in the following section.

Table 6. Checklist for documenting environmental baseline and effects of proposed actions on relevant anadromous salmonid habitat indicators

Pathways Indicators	Environmental Baseline			Effects of the Action		
	Properly Functioning	At Risk	Not Properly Functioning	Restore	Maintain	Degrade
Water Quality:						
Temperature		X			X	
Sediment		X			X	
Chem. Contam./Nut.		X			X	
Habitat Access:						
Physical Barriers		X			X	
Habitat Elements:						
Substrate		X			X	
Large Woody Debris			X		X	
Pool Frequency			X		X	
Pool Quality			X		X	
Off-Channel Habitat			X		X	
Refugia			X		X	
Channel Cond. and Dynamics:						
Width/Depth Ratio			X		X	
Streambank Condition		X			X	
Floodplain Connectivity			X		X	
Flow/Hydrology:						
Peak/Base Flows			X		X	
Drainage Network Increase		X			X	
Watershed:						
Road Density and Location		X			X	
Disturbance History		X			X	
Riparian Reserves		X			X	

3.4. Baseline Condition Justification

3.4.1 Water Quality

The *Temperature* parameter is “at risk”. Water temperatures in the action area sometimes exceed water quality standards during the summer months and temperatures vary among years. The Snake River in Hells Canyon has historically exceeded 70° Fahrenheit during summer. Cold water is released annually from Dworshak Dam, July – September, to provide cold water to the lower Snake River for upriver migrating salmonids. This proposed action would have no effect on water temperature.

The *Sediment* parameter is “at risk”. Sediment deposition and transport is expected to occur at an approximately consistent rate in the same areas within the action area. The Snake River experiences a great fluctuation of flows between low and high flow periods, and the reach characteristics dictated by the operation of Lower Granite Dam likely define where and how much sediment deposition occurs. While the reclassification of acreage to Wildlife and Mitigation would ensure that a riparian buffer will remain in much of the action area, the proposed action would have no effect on sediment transport or deposition.

The *Chemical Contaminants/Nutrients* parameter is “at risk”. Nutrient levels in the Snake River are sometimes high due to agricultural runoff, but similar to sediment transport, the proposed action would have no effect on contaminants or nutrients.

3.4.2 Habitat Access

The *Physical Barriers* parameter is “at risk” within the Snake River. The lower Snake River dams provide fish passage, but some migrants are delayed or are killed. The proposed action would not add or remove physical barriers, therefore, having no effect.

3.4.3 Habitat Elements

The *Substrate* parameter is “not properly functioning”. Similar to the sediment parameter, sand and silt may deposit in specific areas of the Snake River within the action area. While the reclassification of acreage to Wildlife and Mitigation would ensure that a riparian buffer will remain in much of the action area, the proposed action would have no effect on substrate.

The *Large Woody Debris* parameter is “not properly functioning”. Very little large woody debris deposits along the shoreline, particularly in the dam tailrace. Most is carried further downstream and collects behind Little Goose Dam. There is potential for habitat restoration projects within the action area to contribute woody debris over time, but it may not accumulate within the action area. Therefore, the proposed action would have no effect on the amount of large woody debris along the shoreline.

The *Pool Frequency* parameter is “at risk”. While the lower Snake River dams are run-of-river dams that generally pass the incoming river volume, the forebay pools act much like one large pool instead of multiple smaller pools with riffles or runs in between. This alters the characteristics of the river. The proposed action would have no effect on pool frequency in the Snake River.

The *Pool Quality* parameter is “at risk”. Pool characteristics have been greatly altered by the lower Snake River dams. The proposed action would have no effect on the pool quality of the river.

The *Off-Channel Habitat* parameter is “not properly functioning”. Little to no off channel habitats exists along the lower Snake River. The proposed action would have no effect on available off-channel habitat in the river.

The *Refugia* parameter is “at risk”. Refugia sources such as large woody debris are limited in the Snake River. There is potential for habitat restoration projects within the action area to contribute woody debris over time, but it may not accumulate within the action area. The proposed action would have no effect on the available refugia in the river.

3.4.4 Channel Condition and Dynamics

The *Width to Depth Ratio* parameter is “not properly functioning”. The reservoir is much deeper and wider than the pre-impoundment Snake River. The proposed action would have no effect on the river’s width to depth ratio.

The *Streambank Condition* parameter is “at risk”. There are areas of erosion sporadically along the shoreline. Generally only a thin band of riparian vegetation exists along the river as the natural riparian and floodplain was inundated by the lower Snake River dams. Developed streambanks within the action area may be reinforced with riprap, or otherwise stabilized with vegetation. There is potential for habitat restoration projects within the action area to improve streambank condition over time. Therefore, the proposed action may improve streambank condition, but at a minor scale relative to the watershed.

The *Floodplain Connectivity* parameter is “not properly functioning”. The reservoir level is controlled by Lower Granite Dam. In addition levees were constructed to confine the river, not allowing the river access to the floodplain. The proposed action would have no effect on the river’s floodplain connectivity.

3.4.5 Flow and Hydrology

The *Peak/Base Flows* parameter is “not properly functioning”. The river is controlled somewhat by Hells Canyon Dam and Dworshak Dam. The hydrograph has been modified from its historic condition. The proposed action would have no effect on river flows.

The *Drainage Network Increase* parameter is “at risk”. Urban development with its impervious surfaces has increased local runoff in many areas along the Snake River; however, there is relatively little development around Lower Granite Dam. The proposed action would not increase impervious surfaces, and would have no effect on the watershed’s drainage network.

3.4.6 Watershed Conditions

The *Road Density and Location* parameter is “at risk”. The road network within the Snake River Basin has expanded greatly over the past century. Many forest roads contribute sediment into streams and rivers which adds to the sedimentation problems near Lewiston. The proposed action does not require building any new roads and would, therefore, have no effect on the road density of the watershed.

The *Disturbance History* parameter is “at risk”. Large fires have increased in frequency throughout the Pacific Northwest. Runoff after a fire can carry increased amounts of sediment. Landslides due to fires and roads also affect the streams within the watershed. The proposed action would have no effect on the disturbance history of the watershed.

The *Riparian Reserves* parameter is “at risk”. In general there is only a thin band of riparian vegetation along the Snake River. In many places no riparian trees are present, often replaced by levees and riprap. There is potential for habitat restoration projects within the action area to improve riparian reserves over time. The proposed action may improve riparian reserves, but at a minor scale relative to the watershed.

4 Effects of the Action

This section includes an analysis of general project-related effects of the proposed action, as well as specific effects on the species and critical habitat PBFs. Effects from any interrelated and interdependent activities are also discussed.

The primary effect on listed species and critical habitats would be beneficial in the form of habitat enhancement or preservation. Discussion of beneficial effects is presented below for fishes, wildlife, and plants, separately.

Specific, programmatic actions not already covered under prior ESA consultation (see Section 1.3.3.1) include food plot planting and maintenance in HMUs, and infrastructure maintenance and lawn grass reseeding in developed recreation areas. The effects of these actions are discussed below as well.

4.1 Effects on Listed Species

4.1.1 Anadromous Fishes and Bull Trout

Habitat enhancement and preservation along the Snake River corridor would benefit ESA-listed fishes by ensuring that riparian habitat would either be improved, or at

minimum, remain undeveloped within the action area. Habitat preservation would ensure no development of impervious surfaces or clearing of existing shoreline vegetation, and a vegetated buffer would separate the river from any private land uses (aside from designated cattle watering corridors). Benefits that may be realized from habitat enhancement would be increased shade, shoreline refugia, and food sources.

Therefore, habitat enhancement and preservation associated with land use classification changes may affect, but is not likely to adversely affect anadromous fishes or bull trout.

Food plot planting and maintenance would include ground surface disturbance. Discing would open the soil completely, while drill seeding would only scratch the surface. These actions would have little potential to contribute sediment to the Snake or Clearwater Rivers. Food plots are generally less than one acre in size and are spatially separated from the water such that any runoff would be filtered by grasslands.

Therefore, food plot planting and maintenance would have no effect on anadromous fishes or bull trout.

Native lawn and grass reseeding or turf replacement would involve minor ground surface disturbance with weed-free straw or silt fence applied as a best management practice. Seed would be broadcast and turf would be cut, removed, and replaced. Sediment inputs to the Snake River or Clearwater Rivers is highly unlikely. ***Therefore, native lawn and grass reseeding or turf replacement would have no effect on anadromous fishes or bull trout.***

Infrastructure maintenance such as picnic shelter painting and reroofing, sidewalk or parking lot repair, or other maintenance internal to a structure would not result in any material entering the Snake or Clearwater Rivers. All material would be disposed of in accordance with appropriate laws. ***Therefore, infrastructure maintenance would have no effect on anadromous fishes or bull trout.***

4.1.2 Yellow-billed Cuckoo

Preservation and enhancement of wooded riparian areas within the action area would provide a benefit to yellow-billed cuckoo. Although the species has not been documented in the action area in an unknown number of years, retaining and enhancing cottonwood stands within the river corridor would provide this species suitable food and shelter sources if any individuals found their way into the action area. Native, fruiting trees and shrubs that may be planted would also provide a food source benefit.

Therefore, habitat enhancement and preservation associated with land use classification changes may affect, but is not likely to adversely affect yellow-billed cuckoo.

Food plot planting and maintenance would include ground surface disturbance. Discing would open the soil completely, while drill seeding would only scratch the surface. Food plots would not require removal of any native riparian habitat capable of sustaining yellow-billed cuckoo. Food plots would contain crop species such as corn that may

attract insect prey. **Therefore, food plot planting may affect, but is not likely to adversely affect yellow-billed cuckoo.**

Native lawn and grass reseeding or turf replacement would involve minor ground surface disturbance with weed-free straw or silt fence applied as a best management practice. Seed would be broadcast and turf would be cut, removed, and replaced. Turf and lawn maintenance would occur in developed areas and would not disrupt habitat or food sources. Some noise disturbance may occur from operating small equipment, but given the developed nature and location of recreation areas, effects would be discountable. **Therefore, native lawn and grass reseeding or turf replacement may affect, but is not likely to adversely affect yellow-billed cuckoo.**

Infrastructure maintenance such as picnic shelter painting and reroofing, sidewalk or parking lot repair, or other maintenance internal to a structure may lead to some noise disturbance, but given the developed nature and location of recreation areas and facilities, effects would be discountable. **Therefore, infrastructure maintenance may affect, but is not likely to adversely affect yellow-billed cuckoo.**

4.1.3 Spalding's Catchfly

Habitat preservation would be the greatest benefit to Spalding's catchfly. While a plant doesn't necessarily have habitat, limiting disturbances on Wildlife and Mitigation lands to habitat management activities only would protect Spalding's catchfly. Disturbances that the proposed action would minimize or eliminate are those caused by cattle trampling or grazing, all-terrain vehicle use, potentially less human foot traffic where Recreation acres and practices are reduced, and potentially enhanced invasive species control in newly designated habitat acres. **Therefore, habitat enhancement and preservation associated with land use classification changes may affect, but is not likely to adversely affect Spalding's catchfly.**

Spalding's catchfly have not been found on Corps lands in recent years (Trumbo 2017) and are unlikely to occur in areas where food plots have been established or in developed recreation areas. **Therefore, food plot planting and maintenance, native lawn and grass reseeding or turf replacement, and infrastructure maintenance would have no effect on Spalding's catchfly.**

4.2 Effects on Critical Habitat

4.2.1 Anadromous Fishes

The proposed action may provide benefits to freshwater rearing and freshwater migration; therefore, those PBFs will be discussed further. The proposed action would have no effect on the other PBFs (Table 7).

Freshwater rearing: Riparian habitat enhancement may improve rearing habitat by providing shade, woody debris, and food sources where tree species such as cottonwood, willow, and alder are planted. Undeveloped shoreline within the action area

generally provides appropriate depths, flow, and substrates, which would remain unaffected, or enhanced by the removal of invasive species as a result of the proposed action. Energy inputs would support macroinvertebrates as a prey item for juvenile salmonids. Due to food plot spatial separation from the water and best management practices for lawn and turf maintenance, sediment input from these activities is unlikely. **Therefore, the proposed action is not likely to adversely affect freshwater rearing.**

Freshwater migration: Riparian habitat enhancement may improve freshwater migration corridors within the action area by providing shade and woody debris to serve as refugia from predators for both adult and juvenile salmonids. The benefits to juvenile rearing also apply for juvenile migration habitat. **Therefore, the proposed action is not likely to adversely affect freshwater migration.**

Table 7. Effect determinations for the proposed action to the PBFs critical habitat designated for anadromous fish and corresponding species life history events.

Physical and Biological Features	
Site Type	Site Attribute
Freshwater spawning	No Effect
Freshwater rearing	Not Likely to Adversely Affect
Freshwater migration	Not Likely to Adversely Affect
Estuarine areas	No Effect
Nearshore marine areas	No Effect
Offshore marine areas	No Effect

4.2.2 Bull Trout

The proposed action may provide benefits to water quality, migration habitat, food sources, and instream habitat, those PBFs will be discussed further. The proposed action would have no effect on the other PBFs (Table 8).

Water quality: Water quality is not likely to be improved in the grand scheme of the Snake River, but preserving and enhancing riparian habitat ensures a runoff buffer to reduce fine sediment and nutrient inputs. Due to food plot spatial separation from the water and best management practices for lawn and turf maintenance, sediment input from these activities is unlikely. **Therefore, the proposed action is not likely to adversely affect water quality.**

Migration habitat: Riparian habitat enhancement may improve migration corridors within the action area by providing shade and woody debris to serve as refugia from predators for both adult and sub-adult. ***Therefore, the proposed action is not likely to adversely affect the bull trout migration corridor.***

Food sources: Riparian habitat enhancement would improve food sources for bull trout by providing woody debris and energy inputs that would support macroinvertebrates, as well as attract smaller nongame fish species as forage. ***Therefore, the proposed action is not likely to adversely affect the bull trout food sources.***

Instream habitat: Riparian habitat enhancement may provide a minor benefit to instream habitat in the form of woody debris inputs. ***Therefore, the proposed action is not likely to adversely affect instream habitat.***

Table 8. Effect determinations for the proposed action to the PBFs of critical habitats designated for bull trout.

PBFs		
1	Water Quality	Not likely to adversely affect
2	Migration Habitat	Not likely to adversely affect
3	Food Availability	Not likely to adversely affect
4	Instream Habitat	Not likely to adversely affect
5	Water Temperature	No effect
6	Substrate Characteristics	No effect
7	Stream Flow	No effect
8	Water Quantity	No effect
9	Nonnative Species	No effect

4.2.3 Yellow-billed Cuckoo and Spalding’s Catchfly

Yellow-billed cuckoo critical habitat has been proposed, but is not located in the action area.

There is no designated critical habitat for Spalding’s catchfly.

4.3 Effects Determinations

4.3.1 Listed Species

The Corps determined that the proposed action may affect, but is not likely to adversely affect all associated ESA-listed species. Effects determinations for listed species are summarized in Table 9.

4.3.2 Critical Habitat

Due to the neutral or positive effects of the proposed action on the environment, the PBFs of anadromous fish and bull trout critical habitat in the action area are likely to remain functional, or retain their current ability to become functionally established, and to serve the intended conservation role for these species. Therefore, the Corps has determined that the proposed action is not likely to adversely affect critical habitat for any of the affected ESA-listed fishes (Table 9). The proposed action would have no effect on yellow-billed cuckoo proposed critical habitat as there is none in the action area.

Table 9. Effect determinations for listed species and critical habitat that may occur in the action area.

Species	USFWS Species Determination	Critical Habitat Determination
Snake River Sockeye Salmon	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Snake River Spring/Summer Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Snake River Fall Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Snake River Steelhead	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Bull Trout	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Yellow-Billed Cuckoo	May Affect, Not Likely to Adversely Affect	No Effect
Spalding's Catchfly	May Affect, Not Likely to Adversely Affect	None Designated

4.3.3 Environmental Baseline

While the Corps proposes to change land use classifications for Granite Lake lands, the proposed changes reflect how the land has been managed for over forty years. There would be no degradation of the environmental baseline as a result of Corps land management actions. The proposed increase in acreage under wildlife and mitigation classifications would only ensure habitat enhancements and maintenance precluding development. ***Therefore, the proposed action would maintain or improve the environmental baseline within the action area.***

5 Magnuson-Stevens Act - Essential Fish Habitat

The consultation requirement of section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) directs Federal agencies to consult with NMFS on all actions, or proposed actions that may adversely affect Essential Fish Habitat (EFH). Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

Due to the neutral or positive effects of the proposed action on the environment, the proposed action would not adversely affect EFH.

6 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) authorizes the USFWS to evaluate the impacts to fish and wildlife species from proposed Federal water resource development projects that could result in the control or modification of a natural stream or body of water that might have effects on the fish and wildlife resources that depend on that body of water or its associated habitats.

The proposed action does not modify a natural body of water, but the construction of the Snake River hydropower dams did drastically modify the Snake River. For this reason, to comply with FWCA, the Comp Plan was drafted by the Corps. The proposed action supports the Comp Plan and FWCA. Furthermore, habitat management priorities are developed cooperatively among the Corps, USFWS, and Washington Department of Fish and Wildlife. Under the Comp Plan, the State of Idaho requested acreage only as mitigation, and does not participate in management of Corps lands.

Because the proposed action does not modify a natural body of water and supports both FWCA and the Lower Snake River Fish and Wildlife Compensation Plan, FWCA coordination is not required.

7 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712, as amended) prohibits the taking of and commerce in migratory birds (live or dead), any parts of migratory birds, their feathers, or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof.

The proposed action would benefit migratory birds by protecting and enhancing riparian habitat. This would sustain and improve available food and shelter availability. Should habitat disturbance occur from any actions presented in this document, nesting surveys would be conducted by a trained wildlife biologist prior to taking action and nests would be avoided with appropriate buffers.

Therefore, the Corps has determined that there would be no take of migratory birds as a result of the proposed action.

8 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions, primarily for Native American Tribes. Take under the BGEPA includes both direct taking of individuals and take due to disturbance. Disturbance is further defined in 50 CFR 22.3.

Bald eagles are known to nest throughout Corps managed lands in the Walla Walla District. While all nest sites have not been documented, locations of some are known. Bald eagles can be found roosting and hunting along the Columbia River during the winter months.

Golden eagles are distributed worldwide and occupy habitats from alpine meadows to arid deserts. Washington supports nesting golden eagles east and west of the Cascade Mountains, as well as a winter migratory population from nesting populations in Canada and Alaska. The species has been identified as a state candidate for listing due to declines in the number of nesting pairs at historic nests.

Bald eagle nesting sites have been documented within the action area within in the past few years, and roosting or foraging eagles may be present at any given time in HMUs. The proposed action would protect and enhance bald and golden eagle habitat. Any potential for disturbance from habitat enhancement projects has been considered prior consultations and biological assessments referenced at the beginning of this document.

Therefore, the Corps has determined that there would be no disturbance or take of bald or golden eagles as a result of the proposed action.

9 State-Listed Threatened, Endangered, and Sensitive Species

The action area includes species listed as either Threatened, Endangered, Sensitive, or a Species of Concern by state agencies. There are 147 species listed by the State of Idaho, and 65 species listed by the State of Washington that are not listed under the ESA (See Appendix B). While the Corps is not required to consult with the state agencies on effects of the proposed action to these species and their respective habitats, it should be noted that effects determinations for these species are similar to those made for federally endangered species.

Due to the neutral or positive effects of the proposed action on fish and wildlife habitat, the proposed action is not likely to adversely affect state-listed Threatened, Endangered, and Sensitive Species of Concern, and would further protect these species from physical disturbance within the Lower Granite Project boundaries.

10 Culturally Significant Plants

Similar to consultation with the Services on endangered species, The Corps consults with local tribal entities to ensure their cultural interests are respected relative to any given federal action. The Corps is obligated to promote the welfare of federally recognized Tribes under the Trust Responsibility, a doctrine developed throughout U.S. history by Treaty, statute, case law (including Supreme Court decisions), regulation and policy.

Considering Tribal Trust Resources, the Corps land management actions have the potential to affect culturally significant plant species. The Corps has inventoried plant species across Walla Walla District lands for this, among other purposes. Martin et al. (2012) drafted a *Traditional Plant Study* report for the Corps including 50 culturally important plants (See Appendix C) selected based on three main criteria. First, the plants had to be of past or present cultural importance to most of the five Native American groups that traditionally inhabited the Corps Project areas. Second, regardless of traditional use, plants that do not inhabit any of the Corps lands under study, and plants with broader distributions in the interior Northwest, and most likely to be found across Corps lands, were given priority. Finally, only native plants were included in the study.

Of the 50 species identified by Martin et al. (2012), Shippentower (2017) confirmed 15 species plus nine additional species of cultural significance that occur on Corps lands along the lower Snake River.

Considering the variety of culturally significant plant species that may occur within the action area, the Corps determined that the proposed action is not likely

to adversely affect, and would further protect these species from physical disturbance within the boundaries of Granite Lake.

11 Effects Summary

The Corps has determined that this action, as proposed, **may affect**, but is **not likely to adversely affect** any associated ESA-listed species. The proposed action **may affect**, but is **not likely to adversely affect** critical habitat for ESA-listed fishes, and would have **no effect** on proposed yellow-billed cuckoo critical habitat (Table 10).

It should be noted that the Corps will initiate consultation with the Services prior to taking action for any specific construction or land management activity under the proposed land use classification changes that may affect ESA-listed species or critical habitat.

Table 10. Effect determinations summary for listed species, critical habitats, and other pertinent environmental considerations potentially affected by the proposed action.

Common Name	USFWS Species Determination	Critical Habitat Determination
Snake River Sockeye Salmon	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Snake River Spring/Summer Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Snake River Fall Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Snake River Steelhead	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Bull Trout	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
Yellow-billed Cuckoo	May Affect, Not Likely to Adversely Affect	No Effect
Spalding's Catchfly	May Affect, Not Likely to Adversely Affect	None Designated
MSA		
No Adverse Effects		
FWCA		
Not Applicable		
MBTA		
No Take		
BGEPA		
No Disturbance or Take		
State-Listed T&E Species		
No Adverse Effects		
Culturally Significant Plants		
No Adverse Effects		
Environmental Baseline		
Maintain or Improve		

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Remand for Operation of the Federal Columbia River Power System, 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a) (I) (A) Permit for Juvenile Fish Transportation Program (Revised and reissued pursuant to court order, *NWF v. NMFS*, Civ. No. CV 01-640-RE. (D. Oregon)) May 5, 2008. Portland, Oregon.

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Appendix A

USFWS and NMFS Prior Consultation

Only cover letters appended for Biological Opinions



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office
 Eastern Washington Field Office
 11103 East Montgomery Drive
 Spokane, Washington 99206



In Reply Refer To:
01EWF00-2017-1-0294

Michael S. Francis, Chief
 Environmental Compliance Section
 Walla Walla District Office
 U.S. Army Corps of Engineers
 201 North Third Avenue
 Walla Walla, Washington 99362-1876

APR 12 2017

Dear Mr. Francis:

Subject: Lower Snake River Wildlife Habitat Planting

This responds to your December 28, 2016, letter and associated supplemental biological assessment (BA) requesting informal consultation on the Lower Snake River Wildlife Habitat Planting (WHP). You requested our concurrence with your determinations that the activities proposed in the WHP “may affect, but are not likely to adversely affect” the bull trout (*Salvelinus confluentus*) or its critical habitat. The WHP addresses anticipated planting approaches for two Habitat Management Units (HMU) administered by the U.S. Army Corps of Engineers, Walla Walla District (Corps) along the lower Snake River. The U.S. Fish and Wildlife Service (Service) previously consulted on 12 other HMU plantings in 2013, (01EWF00-2013-1-0446) which are similar to, and associated with, the WHP presented here. In addition, use of herbicides associated with HMUs this WHP, and the HMUs addressed in the 2013 consultation, are addressed in the Corps 2012, Pest Management Program consultation with the Service (01EWF00-2012-1-0378). The plantings addressed in this current BA represent the final plantings under the Lower Snake River Fish and Wildlife Compensation Plan (Comp Plan).

The Corps has determined that this project will have “no effect” on Spalding’s catchfly (*Silene spaldingii*) and the Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). There is no requirement for Service concurrence on “no effect” determinations. Therefore, those determinations rest with the action agency.

The additional HMU plantings discussed here were also identified and discussed in the Corps’ on August 21, 2013 Environmental Assessment (EA) for the overall Comp Plan planting project, developed pursuant to the National Environmental Policy Act. This EA contained additional information relevant to this consultation. This response to your request is based on the information

Michael Francis

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provided in your letter, the accompanying Supplemental BA, and the 2013 Project EA. This consultation has been conducted in accordance with section 7(a)(2) of the Act.

Project Location

This WHP addresses a stretch of the Snake River in Washington from the Town of Central Ferry (Central Ferry HMU), upstream approximately 10 river miles to the Rice Bar HMU near Swift, between the Little Goose and Lower Granite dams. Project areas extend up to approximately 2000 feet inland from the banks of the Snake River.

Project Summary

During the mid-1970s, the Corps developed the Lower Snake River Fish and Wildlife Compensation Plan to help address mitigation for impacts to fish and wildlife habitats due to construction of four Federal dams along the lower Snake River, which are the Ice Harbor (RM 9.5), Lower Monumental (RM 41), Little Goose (RM 70), and Lower Granite (RM 107) Dams. The Corps began implementing the Comp Plan in 1978 by identifying and initiating habitat management activities on 54 HMUs. Consistent with adaptive management practices, and in cooperation with the Service and Washington Department of Fish and Wildlife, the Corps updated management objectives for some of the HMUs to better address the enhancement and maintenance of appropriate riparian and upland habitats along the lower Snake River (Corps 2013a). The work consulted on in 2013, and the additional work proposed here, are designed to help fulfill the updated terrestrial and avian wildlife mitigation objectives established for the Comp Plan.

The proposed work in the WHP would entail implementing planting arrangements within the seasonal inundation, lower transition, upper transition, and xeric upland zones within the Plan's two HMUs. Appropriate plant species mixes, site preparation needs, and planting techniques have been developed to address the habitat enhancement objectives within each zone (Corps 2013b). The proposed activities at each site include the following: mechanical (e.g., mowing), manual (e.g., hand-pulling), biological, or chemical control of invasive plant species; site preparation (e.g., discing to scarify soil surface, grading with heavy equipment); planting (e.g., shoveling / auguring, seeding); mulching; short-term irrigation; and placing temporary wire mesh or fencing around individual or small groups of plantings. The proposed enhancement activities are planned for January to March 2017, October 2017 to March 2018, October to December 2018, and final demobilization in April 2019. Brief summaries of the conditions found at the WHP HMUs follows,

Central Ferry HMU: Approximately 4,000 plants on 10 riparian acres, and 12,000 plants on 30 adjacent upland acres. In riparian areas an excavator would be used to contour and prepare soils for plantings. Following contouring and planting, soils will be stabilized and re-seeded with native grasses. This site is transitioning from a previous campground/recreation area.

Rice Bar HMU: Approximately 8,000 plants on 20 riparian acres. This site requires minimal surface soil/vegetation disturbance beyond that needed to expose soils for effective planting, and reseeded with native grasses.

Current Condition of Bull Trout in and Near the Project Area

Spawning and rearing habitats for bull trout occur in the upper reaches of major tributaries to the Snake and Columbia Rivers, while migration, overwintering, and foraging habitats primarily occur in the middle and lower reaches of the major tributaries and in the main stem of the rivers. There are no major tributaries used by bull trout in the project area. Nearby tributaries used by bull trout include the Tucannon River, which enters the Snake River at RM 63, roughly half way between the Ayer HMU and two upstream HMUs; the Walla Walla River system, which is even further downstream of the project area; and the Clearwater and Asotin Creek systems, which are far upstream of the project area (Asotin is roughly 37 miles above Lower Granite Dam).

Limited studies of acoustic-tagged bull trout in the mainstem Columbia River indicate bull trout utilize deep, slow water habitat, and move rapidly over a large area. It is unclear how and whether they use other near-shore habitat (Barrows et al 2015 p.15, p.56, p.61-62). Subadult bull trout migrate from their respective subbasins to the mainstem Columbia and lower Snake Rivers during the fall and winter months (i.e., October – February (most common)), or during the spring and early summer (i.e., April – June). Following the spawning period, adult bull trout migrate from their respective subbasins to the mainstem in the fall. Movement from some subbasins to the mainstem rivers has been documented during other months, but these observations are much less common (Barrows et al. 2015). Subadult bull trout may stay in the mainstem until reaching spawning size, then return to the tributaries. Juvenile bull trout are not known to use the action area.

The Corps regularly conducts fish counts at passage facilities at McNary Dam on the Columbia River and on all four of the lower Snake River dams to monitor various salmonid populations. The Corps' salmonid monitoring program does not specifically address bull trout and does not continue throughout the year, notably excluding December through February when overwintering bull trout would be expected to occur in the mainstems. Nevertheless, from 2006 through 2014, a total of 2, 4, 136, 418, and 36 bull trout were documented in the fish ladders at the McNary, Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Dams, respectively (Table 1). While the collection of these data was relatively consistent and can be considered comparable among the Dams, they should be viewed with some caution as individual fish were not marked and some may have been counted more than once. Bull trout detected at McNary Dam are documented from the Walla Walla River watershed and the Tucannon River watershed (Barrows et al 2015 p.153)

From 1998 through 2013, a total of 9, 3, and 2 bull trout were also opportunistically documented in juvenile bypass structures during anadromous smolt monitoring activities at the Lower Monumental, Little Goose, and Lower Granite Dams, respectively (Barrows et al. 2015). Finally, the USFWS has also monitored individual bull trout in the lower Snake River that were marked using passive integrated transponder (PIT) tags (Barrows et al. 2015). Between 2006 and 2011, a total of 8 PIT-tagged bull trout were detected on 19 separate occasions, including the detection of the same two fish at the Ice Harbor and Lower Monumental Dams, five individuals at Little Goose Dam, and three at Lower Granite Dam (including two in common with the Little Goose Dam detections). Bull trout from the Tucannon River have been confirmed at the four listed Snake River dams, and also at McNary Dam on the Columbia River (Barrows et al 2015

p.153). Genetic assessments of 12 bull trout collected at Little Goose Dam from 2006 to 2011 also determined that the most likely population of origin for 11 of the bull trout was the Tucannon River, and one was the Imnaha River (Barrows et al 2015 p.202).

Table 1. Fish ladder counts of bull trout at Corps dams on the mid-Columbia and lower Snake River (2006 – 2013).

Dam Facilities	Total Number of Bull Trout Recorded by Year						Total
	2006-09	2010	2011	2012	2013	2014	
McNary	2	0	0	0	0	0	2
Ice Harbor	0	0	3	0	1	0	4
Lower Monumental	13	12	47	27	26	11	136
Little Goose	73	73	161	42	64	5	418
Lower Granite	24	8	1	2	0	1	36
Total	112	93	212	71	91	17	596

Studies have also documented bull trout originating from local populations in the upper Clearwater River watershed migrating downstream as far as Lewiston, Idaho (USFWS 2008, p. 33), which is a just above the confluence of the Snake and Clearwater Rivers. The mainstem of the lower Clearwater River provides potential connectivity of these local populations to occupied areas within the broader region of the Snake and Columbia Rivers. Migratory corridors such as these also provide bull trout in the broader region with possible access to unoccupied, but suitable habitats, enhanced foraging areas, and refuge from disturbances in other watersheds (Saunders et al. 1991).

Both fluvial and resident bull trout spawn in cold, headwater tributaries sometime between late-August and November, though the specific dates vary from year-to-year and stream-to-stream based on local conditions. After spawning, fluvial bull trout return to overwintering areas in the mainstem river habitat until the following spring when the upstream migration begins, presumably in response to increasing water temperatures. Fluvial bull trout typically spend the summer months slowly working their way up to the headwater tributaries to spawn.

Current Condition of Bull Trout Critical Habitat in and Near the Project Area

The Primary Constituent Elements (PCEs) associated with bull trout critical habitat that support the essential reproduction, feeding, sheltering, and dispersal life history components of bull trout populations (70 FR 63898) include: subsurface water sources (#1), migration habitat components (#2), food availability (#3), structural components of the aquatic environment (#4), water temperatures (#5), spawning and rearing substrates (#6), river hydrograph (#7), water quality (#8), and the occurrence of non-native predatory or competitive fish species (#9).

Numerous baseline factors have impacted critical habitat in the WHP project area, as described in this BA, and numerous Service Biological Opinions for other regional projects. In general, reservoir environments and flow regimes that are currently present in the mid-Columbia and lower Snake and Clearwater Rivers within the action area are significantly altered from the

historic riverine conditions that existed. Generally, the reservoirs have streambanks characterized by cliffs and talus, and some shorelines have been extensively armored with riprap resulting in diminished aquatic and riparian habitat complexity in many areas. However, shoreline habitat complexity associated with the HMUs discussed here is somewhat better. Water and sediment quantity and quality is also relatively good in the mainstem portion of the Program area. However, in warmer months, temperature and dissolved oxygen periodically do not meet State standards (Washington Department of Ecology Water Quality Atlas, <https://fortress.wa.gov/ecy/waterqualityatlas>). Overall, however, the conditions and processes (e.g., seasonal flow patterns, channel complexity, large wood recruitment, litter fall, etc.) that supported the historic riverine environments within the action area have been replaced with more simplified reservoir habitats since construction of the dams.

Project Effects to Bull Trout

Potential WHP impacts to bull trout could result from very slight increases in local turbidity and disturbance levels, due to actual planting and related enhancement activities (e.g., transporting and staging equipment), invasive species and pest control activities (chemical and mechanical), and the inadvertent release of toxic chemicals into the watercourse associated with the operation of heavy equipment. With regard to invasive species and pest control, the Corps will conduct these activities in accordance with the Corps' Pest Management Program for Columbia River, Snake River, and Mill Creek, which the Service has previously consulted on (01EWF00-2012-I-0378). That consultation concluded that the proposed activities "may affect, but are not likely to adversely affect" the bull trout or its critical habitat.

Other potential WHP impacts will be minimized if not eliminated via use of numerous Best Management Practices described in detail in section 1.3.3 of the BA. Measures include only conducting activities within the seasonal inundation zone at low water levels (when no standing water is present); implementing appropriate set-backs for heavy equipment fueling, cleaning, and staging areas; and spill prevention, containment, and clean up procedures. In addition, any turbidity plumes that may result from the planting operations would quickly dissipate considering the water volume and flow characteristics of the Snake River at the work sites.

Furthermore, there are no spawning and rearing habitats or high-quality overwintering and foraging habitats in the general vicinity of the HMUs addressed here, and the adjacent river segments are likely used only occasionally by a small number of migrating bull trout. In the unlikely event that an individual or a small number of bull trout are present in the river in the immediate area and at the time of the enhancement operations, potential effects from the proposed activities would be of short duration and limited to very local, shallow, and relatively warm near-shore habitat, while the vast majority of the overall project area would remain unaffected. In addition, the proposed project would be partly undertaken to prevent further expansion of invasive plant species and to ultimately improve the areas' riparian and upland habitats, potentially resulting in slight long-term beneficial effects to bull trout. Considering the above, any potential negative impacts to bull trout from the WHP would be expected to be insignificant.

Michael Francis

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Project Effects to Bull Trout Critical Habitat

The proposed WHP activities, beyond those previously considered under the Corps' Pest Management Program (see above), would have no effect on seven of the identified PCEs, including those related to subsurface water sources (#1), migration habitat components (#2), food availability (#3), water temperatures (#5), spawning and rearing substrates (#6), river hydrograph (#7), and the occurrence of non-native predatory or competitive fish species (#9). The proposed activities may have some minor effect on two PCEs, including those related to structural components of the aquatic environment (#4) and water quality (#8). As discussed above, the WHP may result in very slight, longer-term improvements in the quality of aquatic structural components and very slight, short-term increases in turbidity within the immediate area of the proposed activities. However, these potential effects would not be expected to result in any measureable impacts to bull trout critical habitat and would be insignificant.


Concurrence

Based on the above information and the WHP project description, the proposed actions would not impact any high-quality habitats potentially used by bull trout or create any significant disturbance in areas likely to be occupied by bull trout at the time of the proposed actions. Furthermore, the proposed actions would not significantly impact any PCEs of bull trout critical habitat. For these reasons, the effects from the proposed actions are expected to be insignificant to the bull trout and bull trout critical habitat. Therefore, considering the current status of this species, its critical habitat, and project effects, the Service concurs that the WHP may affect, but is not likely to adversely affect the bull trout or bull trout critical habitat.

This concludes informal consultation pursuant to section 7(a) (2) of the Act. Concurrence by the Service is contingent upon implementing the Project as described in the BA and related documents. In addition, the Project should be re-analyzed if new information reveals that effects of the action may affect listed species or critical habitat in a manner or to an extent not considered in this consultation; if the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this consultation; and/or if a new species is listed or critical habitat is designated that may be affected by the Project.

If you have further questions about this letter or your responsibilities under the Act, please contact Russ MacRae at our Eastern Washington Field Office in Spokane at (509) 893-8001.

Sincerely,



For
Eric V. Rickerson, State Supervisor
Washington Fish and Wildlife Office

cc: NMFS, Boise, ID (Troyer)

REFERENCES:

- Barrows, M.G., P.M. Sankovich, D.R. Anglin, J.M. Hudson, R.C. Koch, J.J. Skalicky, D.A. Wills, and B.P. Silver. 2015. Use of the Mainstem Columbia and Lower Snake Rivers by Migratory Bull Trout. Data Synthesis and Analysis. Draft Report. U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, WA. Draft Report 4-1-2015.
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United States Department of the Interior



FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office
Eastern Washington Field Office
11103 East Montgomery Drive
Spokane Valley, Washington 99206

In Reply Refer To:
01EWF00-2014-F-0335

MAY 22 2017

Michael Francis
Chief, Environmental Compliance Section
Department of the Army
Walla Walla District, Corps of Engineers
201 North Third Ave
Walla Walla, Washington 99362-1876

Dear Mr. Francis:

This letter transmits the U. S. Fish and Wildlife Service's Biological Opinion on the proposed Aquatic Pesticides Management Program located in aquatic and riparian areas throughout the Walla Walla District in several counties in southeast Washington, northeast Oregon, and northern Idaho, and its effects on bull trout (*Salvelinus confluentus*), and critical habitat for the bull trout. Formal consultation on the proposed action was conducted in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your initial request for formal consultation was received on March 25, 2014, and your final revised proposed action was received on January 27, 2017.

The enclosed Biological Opinion is based on information provided in the March 7, 2014, Biological Assessment (BA), subsequent revisions of that BA and proposed action, telephone conversations, meetings, and other sources of information cited in the Biological Opinion. A complete record of this consultation is on file at the Eastern Washington Field Office in Spokane, Washington.

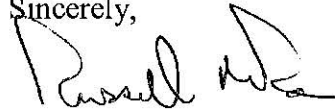
Your biological assessment also includes "no effect" determinations for several additional species and their critical habitat. There is no requirement for concurrence by the Service on "no effect" determinations. Therefore, your determinations rest with the action agency.

Michael S. Francis

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If you have any questions regarding the enclosed Biological Opinion, our response to your concurrence request(s), or our shared responsibilities under the Act, please contact Russ MacRae at 509-893-8001, or Michelle Eames at 509-893-8010.

Sincerely,



for

Eric V. Rickerson, State Supervisor
Washington Fish and Wildlife Office

Enclosure



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to NMFS No: WCR-2014-688

April 19, 2016

Lt. Col. Timothy R. Vail
U.S. Army Corps of Engineers
Walla Walla District
201 North Third Ave.
Walla Walla, Washington 99362

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Aquatic Pest Management Program in the Walla Walla District, HUCs 17020016, 17030003, 17070101, 17070102, 17060103, 17060107, 17060108, 17060110, 17060306, Washington, Oregon, and Idaho

Dear Lt. Col. Vail:

Thank you for your email of January 5, 2016, amending the February 2, 2015, biological assessment and requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 *et seq.*) for the Aquatic Pest Management Program. The enclosed document contains a biological opinion (Opinion) prepared by NMFS on the effects of the U.S. Army Corps of Engineers' Aquatic Pest Management Program. In this Opinion, NMFS concludes that the action, as described, is not likely to jeopardize the continued existence of Snake River Basin steelhead, Snake River Basin spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River sockeye salmon, Upper Columbia River spring Chinook salmon, Upper Columbia River steelhead, Middle Columbia River steelhead, nor result in the destruction or adverse modification of designated critical habitat for these species.

As required by section 7 of the ESA, NMFS provided an incidental take statement with the Opinion. The incidental take statement describes reasonable and prudent measures NMFS considers necessary or appropriate to minimize incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the Federal agency and any person who performs the action must comply with to carry out the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

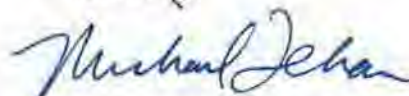


This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes five conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These conservation recommendations are not identical to the ESA terms and conditions. Section 305(b)(4)(B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH conservation recommendations, the COE must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of conservation recommendations accepted.

Please contact David Arthaud, Snake Basin Office, (208) 378-5696, david.arthaud@noaa.gov if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,



for William W. Stelle, Jr.
Regional Administrator

Enclosure

cc: R. MacRae – FWS
R. Hennekey – IDFG
B. Tice – COE
G. James – CTUIR
S. Parker – YIN
A. Rogerson – NPT
C. Colter – SBT
A. Pleus – WDFW
R. Boatner – ODFW



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office
Eastern Washington Field Office
11103 East Montgomery Drive
Spokane Valley, Washington 99206

In Reply Refer To:
01EWF00-2013-I-0446

Michael S. Francis, Chief
Environmental Compliance Section
Walla Walla District Office
U.S. Army Corps of Engineers
201 North Third Avenue
Walla Walla, Washington 99362-1876

SEP 17 2013

Dear Mr. Francis:

Subject: Lower Snake River Planting Project

This responds to your July 10, 2013, letter requesting informal consultation on the Lower Snake River Programmatic Planting Plan (Plan). Your letter and accompanying biological assessment (BA) for the Plan were received in this office on July 22, 2013, and requested our concurrence with your determinations of effect for the bull trout (*Salvelinus confluentus*) and bull trout critical habitat. Your BA concluded that the activities proposed in the plan “may affect, but are not likely to adversely affect” the bull trout or its critical habitat. The Plan addresses anticipated planting schemes for twelve Habitat Management Units (HMU) administered by the U.S. Army Corps of Engineers (Corps) along the lower Snake River. We received information addressing an additional area to be considered in the Plan, the Swift Bar HMU, on August 19, 2013.

Through follow-up communications with Mr. Ben Tice of your staff on August 19, 2013, we understand that the Corps is currently only requesting consultation on the portion of the Plan that is likely to be implemented within the next year, and would include the Ayer, Willow Bar, and Swift Bar HMUs, which occur in Walla Walla, Garfield, and Whitman Counties, Washington. For purposes of this consultation, proposed activities on these three HMUs constitute the Lower Snake River Planting Project (Project). Through follow-up communications, the Corps also concluded that the Project would have “no effect” on the pygmy rabbit (*Brachylagus idahoensis*), Canada lynx (*Lynx canadensis*), Ute ladies’ tresses (*Spiranthes diluvialis*), or Spalding’s catchfly (*Silene spaldingii*). There is no requirement for U.S. Fish and Wildlife Service (Service) concurrence on “no effect” determinations and, therefore, those determinations rest with the action agency. In addition, the Corps determined that the proposed Plan “may affect, but is not likely to adversely affect” the Washington ground squirrel (*Urocitellus washingtoni*), which is currently considered a candidate species for possible listing under the Endangered Species Act of 1973 (Act), as amended

(16 U.S.C. 1531 *et seq.*). The Corps confirmed by E-mail, dated August 19, 2013, that they are not requesting conferencing for the Project with respect to the Washington ground squirrel. Finally, we received the Corps' Environmental Assessment (EA) for the Project, developed pursuant to the National Environmental Policy Act, on August 21, 2013, which contained additional information relevant to this consultation.

This response to your request is based on the information provided in your letter, the accompanying Plan BA, the Project EA, and several follow-up telephone conversations and electronic mail correspondences between Mr. Tice and Mr. Chris Warren from our Eastern Washington Field Office in Spokane. This consultation has been conducted in accordance with section 7(a)(2) of the Act.

Project Location

The Project is located in southeastern Washington along the lower Snake River from roughly river mile (RM) 51 near Ayer, Washington, upstream to RM 98, which is several miles east of Penawawa, Washington. The Ayer HMU (RM 51 – 55) is located on the south bank of the river approximately 12 miles upstream of Lower Monumental Dam and 10 miles below the confluence of the Snake and Tucannon Rivers. The Willow Bar HMU (RM 86 - 89), located on the south bank of the river, and Swift Bar HMU (RM 94 – 98), located on the north bank of the river, are located approximately 17 miles and 26 miles upstream of Little Goose Dam, respectively.

Project Summary

During the mid-1970s, the Corps developed the Lower Snake River Fish and Wildlife Compensation Plan (Comp Plan) to help address mitigation for impacts to fish and wildlife habitats due to construction of four Federal dams along the lower Snake River, which are the Ice Harbor (RM 9.5), Lower Monumental (RM 41), Little Goose (RM 70), and Lower Granite (RM 107) Dams. The Corps began implementing the Comp Plan in 1978 by identifying and initiating habitat management activities on 54 HMUs. Consistent with adaptive management practices, and in cooperation with the Service and Washington Department of Fish and Wildlife, the Corps recently updated management objectives for some of the HMUs to better address the enhancement and maintenance of appropriate riparian and upland habitats along the lower Snake River (Corps 2013a). The proposed Project, as well as the broader Plan, are designed to help fulfill the updated terrestrial and avian wildlife mitigation objectives established for the Comp Plan.

The proposed work would entail implementing planting schemes within the seasonal inundation, lower transition, upper transition, and xeric upland zones within the three Project HMUs. Appropriate plant species mixes, site preparation needs, and planting techniques have been developed to address the habitat enhancement objectives within each zone (Corps 2013b). The proposed activities at each site could include the following: mechanical (e.g., mowing), manual (e.g., hand-pulling), biological, or chemical control of invasive plant species; site preparation (e.g., discing to scarify soil surface, grading cut banks with heavy equipment); planting (e.g., shoveling / auguring, hydro-seeding, aerial seeding); mulching; short-term irrigation; and placing temporary wire mesh or fencing around individual or small groups of plantings. The proposed enhancement activities would begin during fall 2013. Brief summaries of the conditions found at each of the

Project HMUs follows.

The Ayer HMU encompasses 185 acres adjacent to the Snake River, none of which are irrigated. Four separate shoreline sites within the HMU, totaling approximately 40 acres, have been identified for enhancement measures, all of which would entail enhancement of riparian habitats within the seasonal inundation, lower transition, and upper transition zones. The Willow Bar HMU encompasses 309 acres adjacent to the Snake River, of which 18 acres are irrigated. Three separate shoreline sites within the HMU, totaling approximately 48.3 acres, have been identified for enhancement measures, including 8.8 acres of riparian habitat enhancement and 39.5 acres of xeric upland habitat enhancement. The Swift Bar HMU encompasses 442 acres adjacent to the Snake River, of which 74 acres are irrigated. Eight separate shoreline sites within the HMU, totaling approximately 32.5 acres, have been identified for enhancement measures, including 1 acre of riparian habitat enhancement and 31.5 acres of xeric upland habitat enhancement.

Bull Trout

Spawning and rearing habitats for bull trout occur in the upper reaches of major tributaries to the Snake and Columbia Rivers, while migration, overwintering, and foraging habitats primarily occur in the middle and lower reaches of the major tributaries and in the main stem of the rivers. The major tributary used by bull trout in the Project area is the Tucannon River, which enters the Snake River at RM 63, roughly half way between the Ayer HMU and two upstream HMUs. Two other major tributaries used by bull trout in the broader Project area include the Walla Walla River system, which is downstream of the Project and enters the Columbia River roughly 12 miles below its confluence with the Snake River, and the Asotin Creek system, which is upstream of the Project and enters the Snake River roughly 37 miles above Lower Granite Dam.

The Corps regularly conducts fish counts at passage facilities on all four of the lower Snake River dams to monitor various salmonid populations. From 2008 through 2012, a total of 3, 87, 338, and 25 bull trout have been documented at the Ice Harbor, Lower Monumental, Little Goose, and Lower Granite facilities, respectively. Relative to other salmonids, very few bull trout occur within the lower Snake River and relatively little is known about their movements and habitat use in the main stem of the river. However, recent information indicates that there is currently little mixing of bull trout originating from the Tucannon River and those from other populations that occur both above and below the Project area (Kassler and Mendel 2008; USFWS 2008). The available information indicates that a relatively small number of bull trout may occur in the Project area and that these fish likely represent occasional migrants traveling among the major tributaries within the broader Snake River system.

With regard to potential impacts to bull trout due to the proposed weed control activities, the Project would be conducted in accordance with the Corps' Pest Management Program for Columbia River, Snake River, and Mill Creek, which the Service has previously consulted on (Reference #: 01EWF00-2012-I-0378). That consultation concluded that the proposed activities "may affect, but are not likely to adversely effect" the bull trout or its critical habitat. Other potential Project impacts to bull trout could result from very slight increases in local turbidity and disturbance levels, due to actual planting and related enhancement activities (e.g., transporting and staging equipment), and the inadvertent release of toxic chemicals into the watercourse associated with the operation of

heavy equipment. To further reduce these risks, various measures have been identified and would be taken to avoid or control them. These measures include only conducting activities within the seasonal inundation zone at low water levels (when no standing water is present); implementing appropriate set-backs for heavy equipment fueling, cleaning, and staging areas; and spill prevention, containment, and clean up procedures. In addition, any turbidity plumes that may result from the planting operations would quickly dissipate considering the water volume and flow characteristics of the Snake River at the work sites.

There are no spawning and rearing habitats or high-quality overwintering and foraging habitats in the general vicinity of the proposed actions, although the action area could be used occasionally by a small number of migrating bull trout. In the unlikely event that an individual or a small number of bull trout are present in the river in the immediate area and at the time of the enhancement operations, potential effects from the proposed activities would be of short duration and limited to very local, shallow, and relatively warm near-shore habitat, while the vast majority of the overall project area would remain unaffected. In addition, the proposed project would be partly undertaken to prevent further expansion of invasive plant species and to ultimately improve the areas' riparian and upland habitats, potentially resulting in slight long-term beneficial effects to bull trout. Considering the above, any potential negative impacts to bull trout from the proposed activities would be expected to be insignificant.

Bull Trout Critical Habitat

Critical habitat for bull trout is defined by nine primary constituent elements (PCEs) that support the essential reproduction, feeding, sheltering, and dispersal life history components of bull trout populations (70 FR 63898). The proposed project activities, beyond those previously considered under the Corps' Pest Management Program (see above), would have no effect on seven of the identified PCEs, including those related to subsurface water sources (#1), migration habitat components (#2), food availability (#3), water temperatures (#5), spawning and rearing substrates (#6), river hydrograph (#7), and the occurrence of non-native predatory or competitive fish species (#9). The proposed activities may have some minor effect on two PCEs, including those related to structural components of the aquatic environment (#4) and water quality (#8). As discussed above, the Project may result in very slight, longer-term improvements in the quality of aquatic structural components and very slight, short-term increases in turbidity within the immediate area of the proposed activities. However, these potential effects would not be expected to result in any measureable impacts to bull trout critical habitat and would be insignificant.



Concurrence

Based on the above information and the Project description, the proposed actions would not impact any high-quality habitats potentially used by bull trout or create any significant disturbance in areas likely to be occupied by bull trout at the time of the proposed actions. Furthermore, the proposed actions would not significantly impact any PCEs of bull trout critical habitat. For these reasons, the effects from the proposed actions are expected to be insignificant to the bull trout and bull trout critical habitat. Therefore, considering the current status of this species, its critical habitat, and Project effects, the Service concurs that the Project may affect, but is not likely to adversely affect the bull trout or bull trout critical habitat.

This concludes informal consultation pursuant to section 7(a) (2) of the Act. Concurrence by the Service is contingent upon implementing the Project as described in the BA and related documents. In addition, the Project should be re-analyzed if new information reveals that effects of the action may affect listed species or critical habitat in a manner or to an extent not considered in this consultation; if the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this consultation; and/or if a new species is listed or critical habitat is designated that may be affected by the Project.

If you have further questions about this letter or your responsibilities under the Act, please contact Chris Warren at our Eastern Washington Field Office in Spokane at (509) 893-8020.

Sincerely,


 Ken S. Berg, Manager
Washington Fish and Wildlife Office

cc: NMFS, Ellensburg, WA (Driscoll)

References:

- Corps. 2013a. Lower Snake River Compensation Plan: 2013 Study Plan and Justification. Corps of Engineers planning document. Walla Walla, Washington. 9 pp.
- Corps. 2013b. Restoration Planting Design Alternatives for Habitat Management Units in Support of the Lower Snake River Fish and Wildlife Compensation Plan. Planning document developed for the Corps of Engineers. Walla Walla, Washington. 60 pp. plus appendices.
- Kassler, T.W., and G. Mendel. 2008. Genetic Characterization of Bull Trout from the Asotin and North Fork Wenaha River Basins. Study report issued by the Washington Department of Fish and Wildlife, Olympia, Washington.
- USFWS. 2008. Bull Trout Distribution, Movements and Habitat Use in the Walla Walla and Umatilla River Basins. U.S. Fish and Wildlife Service planning document. Vancouver, Washington. 92 pp.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE
 Northwest Region
 7600 Sand Point Way N.E., Bldg. 1
 Seattle, Washington 98115

NMFS Tracking No.:
 NWR-2013-10331

September 19, 2013

Michael Francis
 Chief, Environmental Compliance Section,
 Walla Walla District, Corps of Engineers
 210 North Third Avenue
 Walla Walla, Washington, 99362-1876

Re: Endangered Species Act Section 7 Consultation and Magnuson-Stevens Essential Fish Habitat Response for the Lower Snake River Wildlife Habitat Programmatic Planting Plan, Asotin, Garfield, Whitman, Columbia, Walla Walla and Franklin Counties, Washington and Nez Perce County, Idaho (1706010302 George Creek – Asotin Creek; 1706010303 Captain John Creek – Snake River; 170601070201 Steptoe Canyon-Snake River; 170601070105 Alpowa Creek; 1706010708 Penawawa Creek-Snake River; 1706010703 Deadman Creek; 170601070406 Flat Creek; 170601080806 Willow Creek-Palouse River; 170601100102 Walker Creek-Snake River; 1706011004 McCoy Creek-Snake River).

Dear Mr. Francis:

On July 22, 2013, the National Marine Fisheries Service (NMFS) received your request for written concurrence that the subject action “may affect,” but is “not likely to adversely affect” Snake River (SR) spring/summer-run and fall-run Chinook salmon (*Oncorhynchus tshawytscha*), SR sockeye salmon (*O. nerka*) and SR Basin steelhead (*O. mykiss*) and their designated critical habitat. NMFS has considered the determination of effects under section 7(a)(2) of the ESA, and its implementing regulations (50 CFR Part 402).

This response to your request was prepared by NMFS pursuant section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for preparation of letters of concurrence.¹

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Act (MSA), including conservation measures and any determinations made regarding the potential effects of the action. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance

¹ Memorandum from D. Robert Lohn, Regional Administrator, to ESA consultation biologists (guidance on informal consultation and preparation of letters of concurrence) (January 30, 2006).



for use of the ESA consultation process to complete EFH consultation.² In this case, NMFS concluded that the action would not adversely affect EFH. Thus, consultation under the MSA is not required for this action.

This letter complies with section 515 of the Treasury and General Government Appropriations Act of 2001 (Data Quality Act) (44 U.S.C. 3504 (d) (1) and 3516), and underwent pre-dissemination review using standards for utility, integrity and objectivity.

Consultation History

On July 22, 2013, NMFS received a Biological Assessment (BA) describing the Corp's proposal to help mitigate the effects of the four Lower Snake River Dams on wildlife by improving vegetation in riparian and upland areas on Corps owned and managed lands at various sites along the Lower Snake River between Asotin Slough (RM 147) and the confluence with the Columbia River. The Corps requested concurrence with its finding of "may affect," but is "not likely to adversely affect" SR spring/summer-run and fall-run Chinook salmon, SR sockeye salmon, and SR Basin steelhead and their designated critical habitat. Additional information was received on August 21, 2013 and consultation was initiated at that time.

Description of the Proposed Action

Under the U.S. Fish and Wildlife Coordination Act (FWCA) the Corps is required to mitigate the loss of terrestrial wildlife habitat that resulted from construction of the four lower Snake River dams and the subsequent reservoirs. Under the Lower Snake River Fish and Wildlife Compensation Plan (Comp Plan), fish and wildlife habitat units (HMUs) were designated in 1976 and the Corps began developing these areas for wildlife habitat with mixed success. The Corps has now developed the current planting proposal that will take place over several years on portions of the 31,636 acres of Corps owned property; 23,620 acres of HMU lands, 973 acres of recreation areas and 7,043 acres not associated with an HMU or recreation area. These proposed actions are being analyzed as a programmatic activity because there is a well-defined type of action with potential effects that are repetitive and predictable.

Work will be conducted at each site as plans are developed based site specific soil characteristics, aspect, topography, and hydrology. All work will be performed above the water line. Any work in areas that experience inundation will only occur when the water level is lower than the planting area.

Site work at each planting area could consist of one or more of the following:

- Use of shovel, auger, stinger or similar equipment to create planting holes.
- Fencing individual trees or the perimeter of the planting area for protection from beavers.
- Wire caging/mesh screens around trees to protect them from voles.

² Memorandum from William T. Hogarth, Acting Administrator for Fisheries, to Regional Administrators (national finding for use of Endangered Species Act section 7 consultation process to complete essential fish habitat consultations) (February 28, 2001).

- Biological control of weeds (e.g., planting tall growing species to shade out reed canary grass).
- Chemical control of noxious weeds following the Corps recent Integrated Management Plan guidelines (NMFS NWR-2012-00353; NLAA determination for non-aquatic treatment).
- Temporary Irrigation.
- Mulch.
- Removal of competing vegetation with mechanical equipment (mowers, tractors).
- Clearing of nonnative woody vegetation mechanically or with hand tools.
- Installation of riparian tree species between riprap.
- Hydroseeding, potential aerial application if over large areas.
- Grading a cut bank with equipment to create a gentler slope.

Ground disturbance will be minimized for cultural reasons and to reduce the potential for additional non-native or noxious weed establishment. Replacement of non-native plants in intensively planted areas of irrigated HMUs will occur over time during normal maintenance events or when non-native plants die and need replacement. Over the long term, establishing native plants will result in a more sustainable vegetative ecosystem. Selection of plants and planting methods will be determined by the Corps on a site specific basis.

Action Area

The proposed action will take place on lands and facilities owned and administered by the Corps on both sides of lower Snake River from Asotin Slough at approximately RM 147 downstream to the confluence with the Columbia River. The mainstem of the Snake River in the action area functions primarily as a migratory corridor for all ESA-listed species however; periodically some fall-run Chinook salmon spawning occurs in the tailrace areas of the mainstem dams and some juvenile fall-run Chinook salmon rear in the mainstem reservoirs.

Snake River Basin steelhead were listed as threatened on August 18, 1997 (62 FR 43937). Snake River spring/summer-run Chinook salmon were listed as threatened on April 22, 1992 (57 FR 14653). Snake River fall-run Chinook salmon were listed as threatened on April 22, 1992 (57 FR 14653). Snake River sockeye salmon were listed as endangered on November 20, 1991 (56 FR 58619). The status of each species was reaffirmed on August 15, 2011 (76FR50448).

NMFS designated critical habitat for Snake River Basin steelhead on September 2, 2005 (70 FR 52630); Snake River spring/summer-run Chinook salmon on October 25, 1999 (64 FR 57399); Snake River fall-run Chinook and Snake River sockeye salmon on December 28, 1993 (58 FR 68543). Critical habitat for all listed Snake River salmon includes the bottom and water of the waterways and the adjacent riparian zone. The riparian zone includes those areas within 300 feet of the ordinary high water line (OHWL). For Snake River Basin steelhead critical habitat includes the stream channels within the designated stream reaches, and includes a lateral extent as defined by the OHWL (33 CFR 319.11).

Because the project will occur near freshwater habitat, applicable Primary Constituent Elements³ (PCEs) for critical habitat of Snake River steelhead, Snake River spring/summer-run Chinook salmon, and Snake River fall-run Chinook salmon are those associated with freshwater rearing and migration; and the essential features of critical habitat for Snake River sockeye salmon critical habitat are those associated with freshwater migration.

As stated above, all actions will take place above the wetted edge of the river and as site specific plans are developed. Activities in the inundation zone are most likely to occur in the fall when the reservoir levels are lowest, by which time juvenile salmonids in the reservoirs have moved into the pelagic zone of the reservoirs.

Effects of the Action

For purposes of the ESA, “effects of the action” means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is NLAA listed species is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial.⁴ Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

Because there will be no work below the water line, and the timing of work closest to the water’s edge would be late summer and fall when the reservoirs are low and any juveniles rearing in the reservoirs have moved into the pelagic zone, NMFS expects effects from turbidity and noise to be insignificant to each of the listed species. Because only relatively low toxicity herbicides will be used in riparian areas and because they will be applied in a manner to keep them out of the water, the effects of herbicides are expected to be insignificant. Work will only occur in a few places each year and actions within the terrestrial portion of critical habitat will occur only in areas that are either poorly vegetated or infested with endangered species. Planting of these areas to native species is not expected to significantly reduce the function critical habitat in the short term but is expected to improve habitat function in the long term.

NMFS does not expect the proposed project to appreciably reduce the function of any PCEs for migration or rearing. This assessment is based on the types of actions, the timing relative to the river level, the duration of disturbance in any one site, and the overall area of each watershed that will be treated. Over the long term the proposed action should result in increased shoreline shade and slope stability, increased allochthonous inputs, decreased need for treatments that disturb areas to remove non-native and noxious plants, and a healthier self-sustaining native vegetation ecosystem.

³ When critical habitat was designated for SR Chinook and SR sockeye, the term “essential habitat features” was used. The term Primary Constituent Elements (PCEs) is now used and refers to the same type of habitat and its corresponding function necessary for the conservation of the species.

⁴ U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Act consultation handbook: procedures for conducting section 7 consultations and conferences. March. Final. P. 3-12.

NMFS does not expect that the migrations or rearing movements of any of the subject species will be negatively affected by the proposed action. Accordingly, NMFS concurs that the proposed action is not likely to adversely affect critical habitat for any of the aforementioned species.

Conclusion

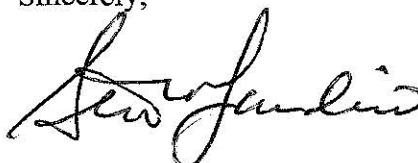
When the preceding factors are taken into consideration and executed properly, NMFS concludes that all effects of the proposed action are NLAA for Snake River spring/summer-run Chinook salmon, Snake River fall-run Chinook salmon, Snake River sockeye salmon, or Snake River Basin steelhead or their designated critical habitats. Concurrence is based on the information in the BA and additional information received electronically from the applicant and is contingent on the action being conducted as described in the BA and emails and full implementation of the effect minimization measures.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Federal agency, or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

Please direct questions regarding this letter to Diane Driscoll of the Washington State Habitat Office at (509) 962-8911 x227 or email at Diane.Driscoll@noaa.gov.

Sincerely,



William W. Stelle, Jr.
Regional Administrator



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office
Eastern Washington Field Office
11103 East Montgomery Drive
Spokane, Washington 99206

In Reply Refer To:
01EWF00-2012-I-0378

NOV 30 2012

Michael S. Francis
Chief, Environmental Compliance Section
Walla Walla District, Corps of Engineers
201 North Third Avenue
Walla Walla, Washington 99362-1876

Dear Mr. Francis:

Subject: Pest Management Program for Columbia River, Snake River, and Mill Creek,
Walla Walla District, U.S. Army Corps of Engineers

In a letter dated June 28, 2012, and received in the Eastern Washington Field Office on July 2, 2012, the Walla Walla District of the Army Corps of Engineers (Corps) requested concurrence with the U.S. Fish and Wildlife Service (Service) that the proposed Pest Management Program (Program) is not likely to adversely affect the bull trout (*Salvelinus confluentus*) or its designated critical habitat. The Corps proposes the Program on Federal lands managed by the Corps within the Walla Walla District (District), generally described as lands along the Columbia and Snake Rivers and tributaries, including lands associated with dams owned and operated by the U.S. Army Corps of Engineers in Idaho, Oregon, and Washington. The goals of the Program are to improve habitat conditions and ensure public health and safety using traditional mechanical, biological, and chemical pest control techniques. The Corps included several independent subactions within the broader Program applicable across the District. While the broader Program and the Biological Assessment (BA) address issues and species across the District for all Corps-managed lands and facilities, it is appropriate, and the Corps requested, that we address these geographically distinct areas separately due to the independent nature of Program implementation across the District. In this light, letters of concurrence were previously provided by the Idaho Fish and Wildlife Office for the Lucky Peak (01EIFW00-2012-I-0405; dated August 9, 2012) and the Dworshak portions of the project (01EIFW00-2012-I-0422; dated

September 17, 2012). The Eastern Washington Field Office is addressing the remaining portion of the broader Pest Management Program: the Snake River, Columbia River, and Mill Creek portions. The Corps proposes to institute a “check-in” with the Service and the National Marine Fisheries Service (NMFS) at 5 years to evaluate whether reinitiation of consultation is necessary. The Corps agreed with the Service (Jason Achziger, Corps, pers. comm., October 31, 2012) that 10 years is a reasonable duration for this consultation. This informal consultation has been conducted in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*)(ESA).

In addition to the effect determination for bull trout and bull trout critical habitat, relevant to the Lower Snake River, Columbia River and Mill Creek component of the Program, the Corps determined that the proposed project is not likely to adversely affect the Washington ground squirrel (*Urocitellus washingtoni*), a candidate species. The Corps confirmed in an E-mail dated July 30, 2012, that they are not requesting conferencing on this candidate species at this time. The Corps further determined that the Program would have no effect on the pygmy rabbit (*Brachylagus idahoensis*), Canada lynx (*Lynx Canadensis*), gray wolf (*Canis lupus*), Ute ladies'- tresses (*Spiranthes diluvialis*); and two candidate species, the greater sage grouse (*Centrocercus urophasianus*), and North American wolverine (*Gulo gulo luteus*). There is no requirement for Service concurrence on “no effect” determinations. Therefore, your determinations rest with the action agency.

Michelle Eames, of the Eastern Washington Field Office attended a project site-visit with the Corps on August 22, 2012. We received additional information and clarification on the BA in telephone conversations and E-mails, including E-mails dated August 13 and 27, 2012. An E-mail received from the Corps on September 5, 2012, confirmed several changes to the BA. Our consultation start date was September 5, 2012. We received an additional E-mail on September 27, 2012, clarifying acreages for chemical applications.

Action Area

The proposed action activities, project elements, and treatment methods described in the BA applies across the District, but the amount of each treatment employed in each geographic area may differ. The total area covered by the proposed action is 72,027 acres of land (28,406 in forest habitat around Dworshak, and 35,117 acres in shrub/steppe around the rest of the projects, as well as 8,444 park/recreation acres). The Corps has broken the proposed action into five geographical areas within the District. Two of the areas, Lucky Peak and Dworshak, have already completed section 7 consultation as described above. The remaining three areas include:

Columbia River Geographic Area

- Operating Projects: McNary Lock and Dam (including McNary Levees in the Tri-Cities). The I-82 Bridge (downstream of McNary Dam) [approximately river mile (RM) 290.5] upstream in the Columbia River past the mouth of the Yakima River to approximately 10 miles upstream (including widely spaced parcels) of Leslie Grove Park

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in the City of Richland, Washington (approximately RM 356.5). Up the Yakima River from its mouth through the City of Richland approximately 5.5 miles to the Van Giesen Street bridge in the City of West Richland (approximately RM 6.5).

- The action area also includes multiple Habitat Management Units (HMUs; some are irrigated to emulate riparian habitat) and recreation areas in the Columbia River geographic area; these are listed on page 27 of the BA.

Snake River Geographic Area

- **Operating Projects:** Ice Harbor Lock and Dam, Lower Monumental Lock and Dam, Little Goose Lock and Dam, and Lower Granite Lock and Dam (including Lewiston Levees). From the confluence of the Columbia and Snake Rivers (RM 0) upstream to the Snake River to Asotin Slough (approximately RM 147.5), just outside (upstream) of the city of Asotin, Washington, and upstream to the Clearwater River, 8.9 miles (RM 8.9) from its confluence with the Snake River (RM 0) in the City of Lewiston, Idaho. This also includes the Tucannon River from RM 0 to approximately RM 3.5 and all surrounding Corps lands.
- **Operations Areas:** The areas around Ice Harbor Lock and Dam, Lower Monumental Lock and Dam, Little Goose Lock and Dam, Lower Granite Lock and Dam, Clarkston Natural Resource Office, and the Lewiston Levees and associated operational facilities and structures.
- The action area also includes multiple HMUs and recreation areas in the Snake River geographic area; these are listed on page 31 of the BA.

Mill Creek Geographic Area

- **District Headquarters:** The District office is a landscaped area that contains ornamental lawn, shrubs, trees, and a parking lot, located at 201 N. Third Avenue, Walla Walla, Washington. The Headquarters occupies two city blocks.
- **Mill Creek:** The Mill Creek Project is approximately 3 mi east of the City of Walla Walla, Washington. It is composed of two major units: 1) the Mill Creek channel (RM 10.4 to RM 11.5); and 2) the off-channel reservoir – Bennington Lake – and the lands surrounding and adjacent to these two units.
- **Operations, recreation areas, and HMUs:** The Corps areas of the Mill Creek channel, Bennington Lake, and surrounding Corps lands, totaling approximately 697 acres. The areas where pest management activities occur in proximity to ESA-listed species or critical habitat at Mill Creek are limited to areas adjacent to Mill and Yellowhawk Creeks.

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Project Description

The Corps proposes to implement an adaptive pest management strategy. Treatments will include manual, mechanical, biological, and chemical control methods to control or eliminate nuisance and noxious species on Corps managed lands in the District. Components and considerations for the action include the following.

The Corps proposes to utilize the following as initial triggers for pest treatment.

- Threat to human health or safety
- Threat to property
- State designated noxious species
- Non-native nuisance species

The Corps proposes to conduct control for the following broad categories of pests (specific pests are identified in the BA).

- Vegetation
- Mammals and Birds
- Arthropods

Each project activity could involve one, two, or three elements. The Corps will treat pests on Corps-managed lands throughout the District using the following project activity elements.

- Manual and Mechanical Control
- Biological Control
- Chemical Control

The Corps proposes to undertake an assessment of all plants proposed for treatment in the District, considering their relative abundance, the likelihood of eradication, availability of biological controls, and effects of an increase in abundance levels or maintenance at existing levels. When completed, each plant will be placed in one of the following categories for future control.

- Eradication
- Aggressive control
- Maintenance near existing levels
- Reduced control by chemical or biological methods
- Cessation of all control

The Corps will classify each plant pest species encountered by one or more of the methods of the control measures based on plant numbers, acres infested, deleterious effects of continued or increased populations, and resistance to certain treatments.

- No Control
- Manual and mechanical control only
- Biological control only
- Chemical control only (this is the default starting point based on past management strategies and budgetary constraints)
- Restoration of vegetation with native or naturalized species (competition)
- A combination of control methods

At least every 5 years weed treatments will be reevaluated, based on previous treatments, professional observations, and coordination with local and state weed boards and personnel, for movement to a different level of treatment. Generally, a 20 percent increase in abundance, despite adequate treatment efforts, will trigger a review for possible movement to a reduced or changed treatment scheme, with a goal of maintaining existing levels, while a 20 percent decrease in abundance will trigger a review for possible movement to an increased treatment scheme, with a goal of further reductions or possible eradication.

Vegetation control will be implemented in uplands, including lands managed specifically for wildlife (i.e., HMUs), park lands including campgrounds and picnic areas, and operational lands such as those found in proximity to dams and other structures. Vegetation control will occur in riparian areas. Vegetation controls will not occur within or over water; however, aquatic weeds such as *Phragmites* sp. and purple loosestrife (*Lythrum salicaria*) could be treated if found outside the water and treated with chemicals and Best Management Practices as described in the BA (included as Appendix A in this letter).

In addition to manual or mechanical control and biological control, the Corps will only use certain herbicides and chemicals. The list of potential chemicals was narrowed through early consultation with the Service and the NMFS. The BA lists the proposed herbicides in Table 10, proposed adjuvants in Table 11, and buffers and wind speed restrictions by application method in Table 12. In an E-mail dated September 5, 2012, the Corps narrowed the wind speed limit from less than 10 miles per hour (mph), to less than 5 mph for aerial applications. Aerial applications will only occur further than 300 feet from the ordinary high water mark.

The Corps included numerous conservation measures as part of the Program (p. 72 to 75 in BA, and attached as Appendix A). These conservation measures make it unlikely that chemicals will enter water, and if they do, it will be unlikely to cause significant effects to listed species. For example, hand or manual chemical application methods that are directed to specific plants will be used for those areas within 15 feet of water. In addition, chemical treatments within 15 feet of “live” waters and in areas of shallow water tables will only use herbicides approved for aquatic use. The methods to be used, depending on the plants and conditions, are wicking and wiping (herbicide wiped onto plants), basal bark (herbicide applied to girdle the plant), frill (also known

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as “hack and squirt” where herbicide is inserted into a cut on the plant), stem injection (injection of herbicide into plant stem via specialized equipment), and cut-stump (herbicide applied to vegetative stump after plant is cut). Hand methods are plant specific, have no drift from sprays, and are the most controlled method of herbicide application.

In some cases, the Corps anticipates more than one pest treatment in a year might be necessary, and treatments may be repeated over time until the pest species are eradicated or controlled. Annual reports submitted to the Service will address areas needing multiple and/or on-going treatment.

The proposed action also includes small mammal control along levees, in or around recreational facilities, in shrub/tree plots within irrigated HMUs, and other areas where small mammals may become a nuisance or cause damage to structures, vegetation, etc. The Corps contracts nuisance animal control to the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), Wildlife Services. Small mammal control will include non-lethal methods, cage traps, body-gripping traps, suitcase traps, spotlighting, shotguns, center fire and rim fire rifles, and hazing and harassment utilizing pyrotechnics. Mammal control will include the use of EPA-approved toxicants (rodenticides). The Corps will use zinc phosphide (e.g. Grant’s Mole Bait) and strychnine alkaloid (strychnine treated oats) for small mammal control. The Corps has included measures to minimize effects or avoid impacts to Washington ground squirrel. Surveys have been conducted on Corps HMUs for small mammals and have found no Washington ground squirrels (Achziger, Corps, pers. comm. 2012). There are outgranted areas where rodenticides may be used where surveys have not been conducted, however these areas are not likely to contain the species (landscaped areas in the Tri-Cities, parks, etc.). Nonetheless, the Corps has proposed surveys prior to rodenticide use to minimize effects. Surveys for Washington ground squirrel will be conducted in treatment areas where rodenticides will be used in Columbia, Franklin, Walla Walla, and Umatilla Counties prior to treatment to determine if the species is present. The Corps will coordinate with a qualified state biologist trained in identification of Washington ground squirrels and their habitat for the surveys, using approved state procedures and protocols. Rodenticides will only be used in areas where Washington ground squirrel may occur after surveys for the species have confirmed no presence or if suitable habitat does not exist in the treatment area. After further discussion on November 26, 2012 (Achziger, Corps, pers.com. 2012), the Corps agreed that after rodenticide applications there will be follow-up surveys and removal efforts to decrease the likelihood of secondary poisoning of raptors or other migratory birds.

In some areas, the Corps will addle Canada goose (*Branta canadensis*) eggs where these birds are a nuisance in parks or recreation areas. This is done pursuant to the APHIS-WS Migratory Bird Treaty Act permit number MB-089914. The Corps will use food grade oils to addle the eggs. Because this activity is done under a separate permit, and the Service does not anticipate effects to bull trout from the addling activity, it will not be addressed further in this informal consultation.

The Corps treats arthropods (such as spiders and hornets) where they are a safety threat to the public or Corps employees in and on facilities on Corps-managed lands. Much of the chemical control for insects in and on buildings and facilities, such as restrooms, administration buildings,

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Corps' hydroelectric facilities, structures within the District, etc., will be isolated from water and have no effect on listed species or critical habitat. Treatments will also include manual, mechanical, and chemical control methods to control nuisance insects such as spiders and hornets that pose a threat to the public and Corps employees on Corps managed lands. The Corps will follow label directions and, in addition, will not spray for arthropods closer than 15 feet from the water's edge, but further than 15 feet from the water's edge will apply Skidoo (butane and propane), Dursban Pro (chlorpyrifos), and Tempo SC ultra (beta-cyfluthrin) (Appendix A, conservation measure 32; BA p. 68). Use of insecticides will occur inside and outside of structures and facilities, and in park and leased areas. Most insecticide use in parks and leased areas occurs along the Columbia and Snake Rivers near Ice Harbor Dam and around the Tri-Cities.

Reseeding and site restoration would not typically be needed for most vegetation management; however, the Corps does include a process when necessary to prevent erosion, restore native vegetation, and stop the proliferation of noxious weeds. This process is described on page 75 of the BA.

The Program also includes a work Planning and Annual Reporting process. Through incorporation of the Work Plan, the Corps will notify the Service of annual acre estimates for vegetation, small mammal, and arthropod treatment, although accurate estimates require reconnaissance which may not occur until March each year. Estimates will also include the application technique that is expected to be used. The Corps will notify the Service if large-scale aerial applications of herbicides are proposed to prevent large weed infestations or damage to native vegetation following a wildfire or other natural disaster, and if these exceed the application acreage estimates provided in the BA, they may need additional consultation. The Corps will also forward annual application reports to the Service in February of each year.

Project Description Columbia River

The Corps anticipates conducting chemical treatments within a total of approximately 560 acres in the Columbia River geographic area; however, some of the acres will receive multiple treatments in the same locations at different times totaling approximately 595 treatment acres (Table 19 in the BA) between March and October of each year. The 560 acres is less than 1 percent of the total land in the action area in the District.

Project Description Snake River

The Corps anticipates making chemical application treatments to approximately 7,200 acres in the Snake River geographic area, with a total acres annually treated (including multiple treatments in the same locations at different times) of approximately 16,500 acres (Table 20 in the BA) between March and October of each year. The 7,200 acres is approximately 10 percent of the total land in the action area in the District.

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Project Description Mill Creek

The Corps anticipates chemically treating 400 acres in the Mill Creek geographic area, with a total amount annually treated (including multiple treatments in the same locations or overlapping treatments) of 1,700 acres (Table 24 in the BA) between March and October of each year. Not all areas will be treated every year. As described in the BA, data for specific locations of past treatments at Mill Creek was somewhat lacking, but the Corps expects applications will generally be made along the levee roads, along other roads, along trails, at Bennington Dam, around operational structures, and at administration sites. These are all developed areas, and mostly used for operations or recreation. The 400 acres is less than 1 percent of the total land in the action area in the District.

Bull Trout Status in Action Area

There are no bull trout spawning areas within the action area. Recent surveys continue to show evidence of bull trout use in the Columbia River (Anglin et al 2010), including PIT-tagged bull trout moving downstream near the mouth of the Walla Walla River and one bull trout moving upstream at the mouth in June, indicating that Walla Walla River bull trout overwinter in the Columbia River. Two bull trout were detected at McNary Dam; one moving downstream in the juvenile bypass, and one in the Oregon shore adult fish ladder. One fish was detected moving upstream through the adult fish ladder at Priest Rapids Dam. These detections at mainstem dams indicate Walla Walla River bull trout are using the Columbia River as a migratory corridor and for rearing and overwintering. A Tucannon River bull trout study (Faler et al 2008) tracked bull trout to the mouth of the Tucannon River and into the McNary Pool portion of the Snake River, an area with no barriers to the Columbia River portion of the McNary Pool.

During much of the year, adult and subadult bull trout are expected to be foraging, migrating, and overwintering in the mainstem Snake River. However, total abundance at any one time appears to be small. As evidenced by Faler et al (2008) and Corps fish passage data, bull trout are present in small numbers throughout the mainstem Snake River. The Corps collects data on fish passage at Ice Harbor, McNary, Lower Granite, and Lower Monumental Dams. Approximately 33 observations of bull trout at the Lower Granite Dam fish ladder have occurred since 2006 (D. Wills, Columbia River Fisheries Program Office, in litt. 2012). Downstream of Little Goose Dam, over 300 observations of bull trout were documented during the same period (D. Wills in litt. 2012). Bull trout observed in the Little Goose and Lower Granite Reservoirs (Snake River) likely originate from two primary core areas: Asotin Creek (upstream) and the Tucannon River (downstream). It is unknown to what extent migratory forms of bull trout use the Snake River between these two core areas. Bull trout observation data suggests the area is important for rearing and foraging subadults and some adults. The majority of observations at the ladders indicate bull trout are less than 20 inches in length (D. Wills in litt. 2012). The Corps fish-passage observations were documented during anadromous salmon monitoring at the dams occurring between February and December of each year. Data for bull trout presence outside the monitoring season or outside of the passage facilities is less clear, with fewer than 10 bull trout observed since 2000 in the fish separators and during loading of juvenile salmon onto the transport barges between April and August.

Fluvial bull trout adults and subadults migrate upstream and downstream from headwater spawning areas through the project area in Mill Creek, and to the Walla Walla River and/or the Columbia River. Adult or subadult bull trout may be present in the project area through most months of the year, though high water temperatures may preclude their use from about mid-August through much of September, depending on the weather and water conditions.

Based on the above information, and the programmatic approach of the proposed action, the Service assumes that bull trout could be in the action area at any time of the year.

Bull Trout Effects

Riparian Vegetation

Riparian and emergent aquatic vegetation provides hiding cover for bull trout or their prey, and support terrestrial and aquatic insects that provide a food base for bull trout. Riparian vegetation may be affected by invasive plant treatment. Some emergent aquatic or riparian vegetation is invasive (such as common reed grass (*Phragmites* sp.) and purple loosestrife) and can take over native vegetation, resulting in an undesirable monoculture. Manual and biological treatment methods do not typically affect large trees that provide large woody debris for habitat structure. The proposed action and treatment methods including implementation of the conservation measures will ensure that the application areas are not extensive or intensive enough to significantly affect the ability of riparian areas to hold soil, help create overhanging banks, or provide hiding cover or refuge. Herbicide treatment of invasive plants in riparian areas is intended to change the vegetative structure to improve the function of riparian areas. Significant loss or reduction in riparian vegetation due to treatment of invasive plants is not expected, and the length of time before suitable vegetation replaces treated weed species to perform important riparian functions will vary considerably across the District. In general, improved riparian function due to invasive plant treatment will benefit bull trout, although there could be localized, short-term effects to their habitat which is likely to be insignificant or discountable. The potential short-term effects from sediment and turbidity, water temperatures, and chemicals are discussed below.

Sediment and Turbidity

Generally, bull trout may be affected by turbidity entering water from upslope activities. Manual, mechanical, or herbicide treatments that are extensive, intensive, and immediately adjacent to a stream course may cause fine sediment delivery, resulting in localized sediment deposition or stream turbidity increases. Turbidity could be caused by ground treatments where vegetation is pulled up, rooted-out mechanically, or by similar, ground-disturbing measures. It could also be caused by vehicle travel or persons disturbing soil, which could then be washed into streams.

Hand pulling of emergent vegetation could result in localized turbidity increases and mobilization of fine sediments. The degree of effect will be in proportion to the extent of the infestation treated, type of substrate in which the plants are rooted, rooting depth, and other

factors. Treatment of streamside invasive species with herbicides is likely to result in short-term increases in localized fine sediment deposition or turbidity only when treatment of locally extensive streamside monocultures occurs. Localized turbidity increases could cause injury to bull trout or displace them into alternative habitat, which is likely to contain suboptimal cover and juvenile forage. However, the treatment methods that the Corps plans to implement (manual, mechanical, and herbicide [limited to cut-stump, and wicking and wiping within 15 feet of water]) are unlikely to cause fine sediment or turbidity increases. Seed clipping, stabbing, girdling, and cutting typically do not involve ground disturbance or result in bare ground. Noxious vegetation is typically found in areas with native vegetation, therefore completely clearing an area of vegetation would not normally occur. If treatments are large and will result in large areas of bare ground, the impact will be minimized by reseeding as described in the BA (p. 75). All invasive non-native riparian vegetation that is treated with herbicides will be monitored for two years following treatment, and if desirable vegetation does not reestablish itself naturally, the Corps will plant or seed new native riparian vegetation.

Because of the limited scope of sediment-producing activities that might result in turbidity and deposition of fine sediment, the scale of the activity relative to the overall land base in the area, the judicious use of buffers near water bodies where only hand methods will be used, the duration and magnitude of turbidity-producing events being limited, and the proposed conservation measures, effects from turbidity on bull trout are likely to be small and would be insignificant to the bull trout.

Water Temperatures

In general, stream temperatures could be affected by the treatment of invasive riparian and emergent vegetation. The Corps has a goal to maintain riparian habitat, especially in HMUs since this is required mitigation from the dams and they do not want to lose mitigation credit (Achziger, pers. comm., October 31, 2012). Dead or removed riparian vegetation provides less shade and cooling effect, than does the same vegetation when it is alive. Stream temperature can be affected by the scope and scale of the project; however, the amount of shade reduction is expected to be limited and short-term until plant regrowth occurs, and the overall amount of shaded area impacted by invasive plant removal would be small compared to the total surface area exposed to the heat-producing effects of the sun on the Columbia River, the Snake River, and Mill Creek. Other factors outside the scope of the project (e.g. topographic shading, elevation, weather, and aspect, tributary temperatures, channel geometry, and ambient air temperature) also affect stream temperature. Shade loss that measurably affects water temperature will be unlikely as a result of the proposed action. The Snake and Columbia Rivers in the action area are extremely wide, and the influence of riparian vegetation that produces enough effective shade to moderate mainstem temperatures that would be treated/removed is de minimus. Baseline conditions at Mill Creek include levees where past management practices have resulted in the removal of woody vegetation, and further treatments would likely not decrease stream shade over baseline conditions.

Due to the generally arid environment within the action area, the large river widths, the limited influence of riparian vegetation along the Columbia River and the Snake River on water temperature, and the existing condition of the Mill Creek action area (most of the potential

riparian area is taken up by an existing levee, roads, and trails), and implementation of the conservation measures that will minimize effects to riparian areas and potentially result in long term beneficial effects from removal of invasive weeds and reestablishment of native woody vegetation, the effects on bull trout from temperature changes due to riparian impacts will be insignificant.

Disturbance

Disturbance of fish can result from the pest management program (i.e. physical presence, movement, sounds, and vibrations of equipment and people). Activities with the most potential to disturb bull trout, such as equipment use, will be at least 15 feet from water. Boats may be used to access a few areas on the Snake River that can't be accessed by vehicles, but the potential disturbance to bull trout from the use of boats is likely to be of short duration and bull trout should be able to move away from the disturbance. Because of minimal use of machinery or boats, and the distance from water, the effects of disturbance on bull trout will be insignificant.

Chemical Exposure and Toxicity

Generally, with pesticide/herbicide applications, chemicals may enter water indirectly via precipitation, run-off, and by being attached to soil particles or vegetative matter that is washed into water. Chemicals could be directly introduced into water bodies by chemical drift caused by wind, spills, or mis-applications. There is uncertainty regarding chemical toxicity effects of the chemicals that may be applied, as some of the active ingredients have not been thoroughly studied (e.g., tests were made on non-salmonids and in laboratory conditions), there is often limited disclosure of the composition of inert ingredients, the fate of the ingredients is often unclear (e.g., degradates, and synergistic and cumulative effects), and the effectiveness of pesticide application best management practices have not been fully tested. Despite these uncertainties, the Corps worked with the Service and NMFS to narrow the list of chemicals in the proposed action to those that are less toxic to fish, and proposes to apply them infrequently and at low rates, and to apply them in limited geographic areas with conservation measures implemented to minimize chemical movement to water.

The Service expects that based on the conservation measures, chemicals will be unlikely to enter the water. The action area receives low rainfall (the Columbia River receives an average of 16 inches of precipitation annually (BA); the Snake River generally experiences 11 to 23 inches of precipitation, and Mill Creek receives about 18 inches of precipitation per year (<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa5387>)). The upland soils are primarily silty loam soils; the bench-type soils tend to be sandy loam with slow runoff characteristics and slight erosion hazards because they tend to be on less steep slopes. Alluvial soils found in the valley bottom, are excessively drained, and range from cobbly coarse sand underlain by stratified cobbles, boulders, gravels, and sand. The Corps has some information regarding sediment quality and herbicide levels in the Snake River from Ice Harbor Dam upstream to Clarkston (p. 162 BA). Although data was not collected in the Columbia River for the tests, it is likely similar to the Snake River. The chemicals 2,4-D, dicamba, glyphosate, and picloram were included in the testing, while aminopyralid, chlorsulfuron, clopyralid, imazapic, imazapyr, metasulfuron-

methyl, sethoxydim, sulfometuron-methyl, and triclopyr were not included. Glyphosate was the only tested herbicide that was detected in the Snake River sediments at a number of sites with concentrations up to 68.9 µg/kg (at Snake RM 78). Therefore, if chemicals did enter the water there may be additive effects, however given the Program and conservation measures, the Service expects that surface or groundwater runoff from upland chemical treatments is unlikely to occur.

Operation of equipment such as ATVs, pick-ups, mowers, and tractors requires the use of petroleum-based fuel and lubricants, which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. Mowers and herbicide application equipment will be staged outside of riparian zones, and all equipment will be cleaned and fueled only in these staging areas. Equipment will be inspected and cleaned prior to any application of herbicides within 150 feet of open water. The conservation measures stated above are expected to reduce the risk of chemical contamination to a level that is not reasonably certain to occur, and therefore, the effects are considered discountable.

The use of rodenticides may occur in close proximity to water (e.g., levees), but never in water; the method of application is typically bait placed directly into burrows. The rodenticides are, therefore, not likely to be translocated to areas where it would adversely affect aquatic species or habitats. Therefore, exposure to this stressor is discountable to bull trout.

The risk of any direct effects to spawning bull trout resulting from Program implementation is discountable because no bull trout spawning occurs in the action area. Foraging, migration, and overwintering habitat does occur in the action area, and the Service assumes that bull trout may be present in the Columbia River, Snake River, and Mill Creek during the proposed action. Due to implementation of the conservation measures, the Service anticipates that bull trout individuals are unlikely to be exposed, therefore the effects to the bull trout are discountable.

Buffer distances from live water, limitations of chemicals used near water (aquatic approved only), limiting chemical applications to prescribed wind speeds by application method, and other conservation measures, serve to minimize the potential for direct exposure to effects of chemical toxicity. The Service believes that based on these measures, that exposure to bull trout is unlikely to occur. Nonetheless, the Corps included an ecological risk assessment discussion in the BA. The risk assessment analysis explores a worst-case scenario including the assumption that the chemicals will reach the water potentially through a spill. However, due to the short duration of exposure to pesticides coupled with the high exchange rate and dilution capacity of water in the Columbia and Snake Rivers, and because hazard quotients for all chemicals proposed for use are less than one (ambient toxicant concentrations would not exceed the no-observed effect level), the Corps determined that the effects to the bull trout would be minimal. While the Service agrees that this type of analysis of a worst case is instructive, due to the many conservation measures the Service believes that a spill near water is unlikely and not reasonably certain to occur, and the potential effects to bull trout from a spill is therefore discountable.

The risk assessment for this action was based on typical chemical application rates and 50 inches of rain per year. The highest average rainfall in the action area is about 23 inches per year, thus that part of risk assessment is conservatively determined. The Service anticipates that a sudden

rain storm washing chemicals into a water body is unlikely due to the arid environment and the predictability of precipitation events in the area. Along the Snake and Columbia Rivers there is typically 10 to 13 inches of precipitation per year, and about 18 inches near Mill Creek, and most precipitation is during winter and spring, outside the application season. Conservation measures and buffers further decrease the likelihood of chemicals reaching the water. Chemicals used immediately adjacent to water bodies must be approved for aquatic use, and are typically less toxic to fish, which minimizes the risk of adverse effects in the event that chemicals reach a stream. One of the conservation measures prevents applications from being made 24 hours prior to a predicted precipitation event sufficient to cause runoff.

Adverse effects to bull trout from exposure and toxicity are unlikely because the conservation measures make exposure to pesticides unlikely to occur. Conservation measures include, but are not limited to: (1) only hand methods of herbicide applications within 15 feet of “live” water; (2) 300 foot buffers for aerial spraying; 50 to 300 foot buffers for broadcast methods; 15 to 300 foot buffers for spot spraying, (3) wind speed restrictions minimizing and avoiding contamination by wind drift; (4) herbicides used within 15 feet of water must be approved for aquatic use by EPA or state water quality agency; (5) herbicides proposed for use are restricted to chemicals with relatively well-documented fish effects and which are known to have moderate or low toxicity to fish; (6) the relatively small amount of acreage treated compared to the overall action area; (7) the dispersed nature of the applications, and (8) large volumes of water in many of the water bodies (e.g., Columbia River). Considering these conservation measures and others listed in Appendix A, effects on bull trout are likely to be insignificant or discountable.

Summary

The Corps includes conservation measures in the proposed action that minimize effects to the bull trout to the point that the proposed action would have insignificant and discountable effects on bull trout.

Critical Habitat Effects

The Columbia River, the Snake River, and Mill Creek are designated as critical habitat for the bull trout. The final revised rule designating bull trout critical habitat (75 FR 63898 [October 18, 2010]) identifies nine Primary Constituent Elements (PCEs) essential for the conservation of the species. The function of the habitat within the action area is foraging, migration and overwintering. Four of the nine PCEs for designated bull trout critical habitat may be affected within the project action area: PCE 3 (abundant food base), PCE 4 (complex river environments), PCE 5 (water temperatures), and PCE 8 (sufficient water quality and quantity).

PCE 3. An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

As described above, riparian vegetation may have small changes in the short-term, with benefits in the long term due to management of invasive weeds. Effects to terrestrial organisms of riparian origin are likely to be insignificant.

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.

Riparian and emergent aquatic vegetation provide hiding cover or refuge for aquatic organisms and fish such as bull trout. Some emergent aquatic or riparian vegetation is invasive (such as common reed grass and purple loosestrife) and can take over native vegetation resulting in an undesirable monoculture. Proposed herbicide treatment of invasive plants in riparian areas is intended to change the vegetative structure to improve the function of riparian areas. Significant loss or reduction in riparian vegetation due to treatment of invasive plants is not expected, and the length of time before suitable vegetation replaces treated weed species to perform important riparian functions will vary across the District. In general, improved riparian function due to invasive plant treatment will benefit bull trout, and maintain or improve the existing shoreline complexity. Effects to riparian areas are expected to be beneficial or insignificant.

PCE 5. Water temperatures ranging from 2 °C to 15 °C (36 °F 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.

The 10 year average water temperature on the Columbia River in Pasco between August 1 and September 1 is between 68°F (20°C) and approximately 69.8°F (21°C), the lethal limit for juvenile bull trout. On the Snake River the preferred temperature range for bull trout is exceeded from mid-May to mid-October at the upstream end of , and near the lower end of , Corps managed lands. Temperatures within the mid- and lower Mill Creek, especially downstream of the Corps facilities, are generally above 59 degrees Fahrenheit from about early June to mid-September (USFWS 2011), although bull trout have been detected in Mill Creek into July and August. Shade loss that measurably affects water temperature will be unlikely as a result of the proposed action. The Snake and Columbia rivers in the action area are extremely wide, and the influence of riparian vegetation that produces enough effective shade to moderate mainstem temperatures would be small. Baseline conditions at Mill Creek include existing levies that support little vegetation, and further treatments would not likely decrease stream shade from baseline conditions. The effects to water temperatures from the proposed action are insignificant.

PCE 8. Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.

As described above, proposed activities could cause sediment entry into rivers and creeks; however the conservation measures that will be implemented should minimize that likelihood.

Runoff of pesticides or rodenticides into the aquatic system is also unlikely due to the conservation measures. There should be no contamination from machinery because equipment will be staged outside of riparian zones, inspected, cleaned and fueled in these staging areas.

Michael S. Francis

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The conservation measures will likely reduce the risk of chemical contamination to a level that is not reasonably certain to occur, and is, therefore, discountable.

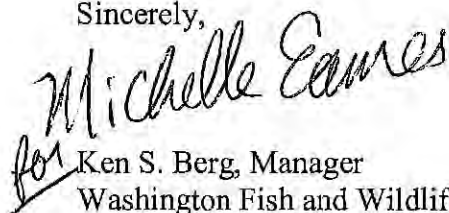
In summary, the potential effects to the listed PCEs from the proposed action are considered discountable or insignificant, and the critical habitat will continue to provide foraging, migration, and overwintering habitat for the bull trout similar to the current condition.

Concurrence Summary

The Service concurs that the Pest Management Program for the Columbia River, the Snake River, and the Mill Creek portions of the proposed action is not likely to adversely affect the bull trout, or designated critical habitat for the bull trout. This letter also confirms that the project as a whole, including the Lucky Peak and Dworshak portions of the Pest Management Program, has been considered, and informal consultation is concluded pursuant to section 7(a)(2) of the ESA. This project should be re-analyzed if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this consultation; if the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this consultation; and/or, if a new species is listed or critical habitat is designated that may be affected by this project.

If you have further questions about this letter or your responsibilities under the ESA, please contact Michelle Eames of this office at 509-893-8010.

Sincerely,


for Ken S. Berg, Manager
Washington Fish and Wildlife Office

cc:

FWS-LFO, LaGrande, WA (G. Miller)
FWS-IFO, Boise, ID (M. Robertson)

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