US Army Corps of Engineers ®
Walla Walla District
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SWALLOWS BEACH RESTORATION

Lower Granite Lock and Dam
Clarkston, Washington

ENVIRONMENTAL ASSESSMENT

ADMINISTRATIVE RECORD – DO NOT DESTROY

PROJECT FILE NUMBER: PM-EC-2016-0007

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SECTION 1.0 – INTRODUCTION

1.1 Introduction

The Walla Walla District of the US Army Corps of Engineers (Corps) proposes actions to improve water access recreation and public health and safety at Swallows Park in Clarkston, Washington (Figures 1 and 2). The facilities at Swallows Park are part of the Lower Granite Lock and Dam Project. Safe beach access at Swallows Park has not been possible for many years due to shallow waters resulting from sedimentation and degraded water quality, nutrient load, and eutrophic conditions including caused by high densities of Canada geese (*Branta canadensis*) and other birds at the location (Figure 3). The proposed action would create a safe beach access area downstream from the current location, remove a public safety hazard by filling the existing shallow pool, and would plant native vegetation at the location.

Figure 1. Lower Granite Lock and Dam and Swallows Park in Clarkston, Washington.

This Environmental Assessment (EA) is being prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, in accordance with Engineer Regulation (ER) 200-2-2, *Procedures for Implementing NEPA*, and the Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA)*, Title 40 Code of Federal Regulations (CFR), Part 1500-1508, to determine whether the proposed action constitutes a major Federal action significantly affecting the quality of the human environment and whether an environmental impact statement is required.

Figure 2. Swallows Park Location in Clarkston, Washington.

Figure 3. Swallows Beach Location in Swallows Park.

1.2 Purpose and Need for Action

The purpose of the proposed action is to restore a safe swimming area and access to the Snake River, and address public health/safety concerns on Corps managed federal lands at Swallows Park in Clarkston, Washington, in accordance with the Corps public recreation mission. The proposed action is needed because ongoing sedimentation has reduced the existing swimming area depth from over nine feet (in the mid-1970s) to approximately one foot during recent summer recreation seasons. Increasing use of the now shallow pool by Canada geese has resulted in potentially unsafe conditions for the public due to likely high fecal coliform bacteria counts. The existing beach access has not been usable by the public for water based recreation since approximately 2000 due to the shallow water conditions and the likely hazards to public health and safety.

1.3 Authority

The Lower Granite Project was authorized in the River and Harbor Act of 1945 (P.L. 79-14) which authorized construction of a series of dams on the reach of the Snake River downstream from Lewiston, Idaho, substantially in accordance with House Document 704, Seventy-fifth Congress.

The authorized purposes of the Lower Granite Project, include navigation, hydroelectric power, incidental irrigation and necessary flow conveyance through the Lewiston, ID levees. The Flood Control Act of 1944 (P.L. 78-534) authorized recreation as a project purpose. Design Memorandum Number 28.2, dated March 1974 provided design direction for recreational facilities at Swallows Park and the Green Belt. The land use allocation for Swallows Park as determined in the Lower Granite Master Plan (USACE 1974) is “Operations: Recreation - Intensive Use.”

1.4 Background

Construction of Lower Granite Lock and Dam began in July 1965 and the installation of the first three power-generating units was complete in 1975 and power came online in the remaining three units in 1979. This congressionally authorized project consists of Lower Granite Dam, navigation lock, powerhouse, a fish ladder, and associated facilities, including Swallows Park in Clarkston, Washington.

Corps Projects on the Snake and Columbia Rivers, including Lower Granite Lock and Dam, are operated to improve passage and survival for Endanagered Species Act (ESA)-listed Chinook and sockeye salmon and steelhead. Reasonable and Prudent Alternatives to operating the Federal Columbia River Power System (FCRPS) have been implemented per the 2008 FCRPS Biological Opinion issued by NOAA Fisheries (NOAA 2008). Research and collaboration among regional stakeholders, including the States of Washington, Oregon and Idaho, the Nez Perce Tribe, and the Columbia River Intertribal Fish Commission, have agreed to seasonal, annual operations for juvenile salmonids at the Lower Granite Project that include restricting turbine unit operations from April 1 to October 31, a spring spill of 20,000 cubic feet per second (cfs) between approximately April 3 and May 31, a summer spill of 18,000 cfs between approximately June 1 and August 31, and the operation of a spillway weir.

Lower Granite Lock and Dam also operates a juvenile fish powerhouse bypass system to route fish out of turbine units around the dam and back into the tailrace where they may be released in-river, or loaded into a barge for the transportation program where fish are barged to the Columbia River estuary. Operations for adult salmon and steelhead include a specific turbine unit operating priority between March 1 and December 15 to attract adults to the fishway entrance as they migrate upriver, and the operation of an adult fish facility to tag adults during their migration, as well as load them on trucks (sockeye salmon) and transport them closer to their spawning grounds during periods of high water temperatures. Finally, cold water is released from Dworshak Reservoir through August in an effort to maintain maximum water temperatures of 68 degrees Fahrenheit at Lower Granite to reduce impacts to adult passage.

Design Memorandum Number 28.2 provided direction for the construction of recreational facilities at Swallows Park including a 600 foot long swimming beach which was constructed in 1976. The Lower Granite Master Plan (1974) estimated that initial use at Swallows Park and Marina would be 200,000 visitor days per year. The swimming beach was popular and heavily used by local residents (Figure 4).

However, by 1979 an EA (USACE 1979) evaluated the need for recreation area maintenance dredging at Swallows Park, including the swim beach. The EA stated that silt had accumulated in the swim area and restricted use because of shallow water conditions. The EA further identified water quality problems at the swim area with fecal coliform bacteria counts exceeding Washington State water quality criteria at times. It was anticipated that maintenance dredging would be required periodically at two to four year intervals.

Figure 4. Swallows Beach in August 1977.

It was reported in the Programmatic Sediment Management Plan (PSMP) Final Environmental Impact Statement (EIS) (USACE 2014) that dredging was performed numerous times in various recreation areas, including Swallows Beach, from 1975-1998, removing a total of approximately 20,000 cubic yards of sediment. However, by the late 1990's siltation had continued filling the pool area and the beach was often unusable to the public due to high coliform bacteria counts and shallow water (Figure 5). A local task force was formed in 1997 to deal with the problems and a number of recommendations were made including renewed dredging, relocating the beach to the downstream end of the offshore island, and filling the existing beach with material from the island. Canada geese densities had also increased contributing to water quality issues. No actions were taken by the Corps at that time and the beach was closed to public use in 2000 due to unsafe conditions caused by the shallow water.

Efforts to deal with the problem were reinitiated by the Corps in 2015 as interest from local municipalities and residents increased. The need to provide safe public beach access and address public health/safety concerns were elevated to the Corps by community members. The pool is stagnant during the summer and is heavily contaminated with fecal coliform from geese, making it unusable by native fish and people in the area. The pool was measured in July 2016 and found to be approximately one foot deep (Figure 6) with almost two feet of muck below (Figure 7).

Figure 5. Swallows Beach in 1993 showing Shallow Pool Depth.

Figure 6. One Foot Pool Depth at Swallows Beach, July 2016.

Figure 7. Unvegetated Mudflat around Pool at Swallows Beach, July 2016.

The stagnant water conditions have created public health and safety concerns. Concern for bird transmitted diseases has arisen and Corp Park Rangers have reported incidents of young people becoming mired in the mudflats while wading.

Local members of the community have expressed concerns regarding the health and safety issues for many years and there is considerable interest in restoring a recreational beach access on the Snake River. The Corps plans to develop a solution to this long-term problem which is the impetus for this EA.

This EA tiers to the Lower Snake River PSMP Final EIS (USACE 2014). The PSMP provides a programmatic framework to evaluate and implement sediment management measures to address the accumulation of sediment that interferes with existing authorized project purposes. Recreation is one of the existing authorized project purposes covered under the PSMP where sediment may limit water depth at recreation areas to less than original design dimensions and thereby impairs access.

Historically with the Lower Snake River Projects (LSRP), the Corps has identified areas where sediment has interfered with authorized project purposes and proposed actions to remove sediment, usually by dredging. The PSMP identifies a wide range of measures to maintain the LSRP to manage and, if possible, prevent sediment accumulation that interferes with authorized project purposes. Swallows Park Swim Beach was identified as a sediment problem area in the PSMP. The PSMP stated that future actions may require project-specific environmental reviews tiered off of the programmatic EIS, involving additional studies and authorities'.

SECTION 2.0 - PROPOSED ACTION AND ALTERNATIVES

2.1 Land Use Allocation

The land use allocation for Swallows Park as determined in the Lower Granite Master Plan (USACE 1974) is "Operations: Recreation - Intensive Use." This designation is defined as:

> "These lands have been acquired for project operations (generally within 300 feet of full-pool shoreline), and are allocated for use as developed public-use areas for intensive recreation activities by the visiting public, including areas for concession and quasi-public development. Intensive use recreation areas are defined as lands on which facilities have been or will be provided to accommodate the recreation needs of visitors in concentrated numbers, and such adjacent or associated lands without facilities as required for open space purposes to make a whole recreation unit. …
>
> Licenses, permits, or easements will not be issued on intensive use recreation lands for such incompatible manmade intrusions as pumping plants, underground or exposed pipelines, cables, overhead transmission lines, nonproject roads, or dredging or filling operations. Exceptions to this restriction may be made where necessary to serve a demonstrated public need in those instances where no reasonable alternative is available. Measures leading to habitat improvement for the benefit of wildlife may be accomplished on intensive-use recreation lands not actually occupied by formal facility development."

The proposed action at Swallows Park is intended to accomplish the Recreation-Intensive Use mission of the Corps.

2.2 Alternative Development

The alternatives for this EA were developed by evaluating combinations of possible activities developed during internal Corps scoping meetings, consideration of actions identified by the local Swallows Beach Task Force in the late 1990s, local conditions, and applicable environmental laws and regulations. The activities and actions were combined into alternatives based on logistical efficiencies, as well as meeting the intensive recreational use mission for the land use allocation.

The following five alternatives were developed:

- Alternative 1 (No Action Alternative)
- Alternative 2 (Dredge Alternative).
- Alternative 3 (New Beach Alternative)
- Alternative 4 (Pool Fill Alternative)
- Alternative 5 (Combined Alternatives 3 and 4-Proposed Alternative)

The alternatives are discussed in more detail in the following sections.

2.2.1 Alternative 1 (No Action Alternative)

Alternative 1, the No Action Alternative, would continue current management of Swallows Park. The existing shallow pool would remain, but there would be no open public beach access. The park areas would be maintained for day uses such as picnicking, walking, but no beach access would be available. The No Action Alternative is prescribed by the Council on Environmental Quality (CEQ) Regulations to serve as the baseline against which all other alternatives are analyzed.

2.2.2 Alternative 2 (Dredge Alternative)

Alternative 2 would use dredging equipment to remove accumulated sediment from the shallow pool and restore the original design to the beach access area for safe public use. The beach access was completed in 1976 as part of the Lower Granite Project. Figure 8 shows the "as constructed" drawing of the beach area and the offshore island created from materials dredged for the swimming location and nearby marina.

As mentioned previously, an EA was completed in 1979 (USACE 1979) for a dredging effort that removed 8000 cubic yards from the Swallows Park beach access. The EA stated that maintenance dredging would be required at two to four year intervals to maintain the recreation site. The PSMP reported that between 1975 and 1998 at total of approximately 20,000 cubic yards were dredged from recreation sites, including Swallow Park beach, to maintain public access.

2.2.3 Alternative 3 (New Beach Alternative)

Alternative 3 would create a new beach access at the downstream (north) end of the existing offshore island (Figure 9). The existing shallow pool would remain. The beach area would be approximately one half acre in size and it is estimated that approximately 6200 cubic yards of sand would be required to create the new beach.

A berm at the north end of the existing shallow channel would be constructed to prevent high river flows from washing into the new beach. The berm would be constructed such that it would be a few feet above the ordinary high water mark (OHWM) elevation of 738 feet. The sand beach would be contoured from that elevation to approximately 740 feet near the water's edge.

2.2.4 Alternative 4 (Pool Fill Alternative)

Alternative 4 would fill the existing shallow pool (Figure 10). This action would remove the public health and safety hazards associated with the existing shallow pool, but would not provide a new beach access. The pool fill area would be approximately two acres in area and it is estimated that up to 22,000 cubic yards of fill material would be required.

A berm at the north end of the existing shallow channel would be constructed to contain high river flows. The berm would be constructed such that it would be a few feet above the OHWM elevation of 738 feet. Filling would start at the north end of the channel and move south as materials become available. The pool would be filled to approximately the same elevation as the berm, including a cap of top soil. Native vegetation, possibly including grasses, forbs, shrubs, and trees, would be planted in the fill to discourage use by Canada geese.

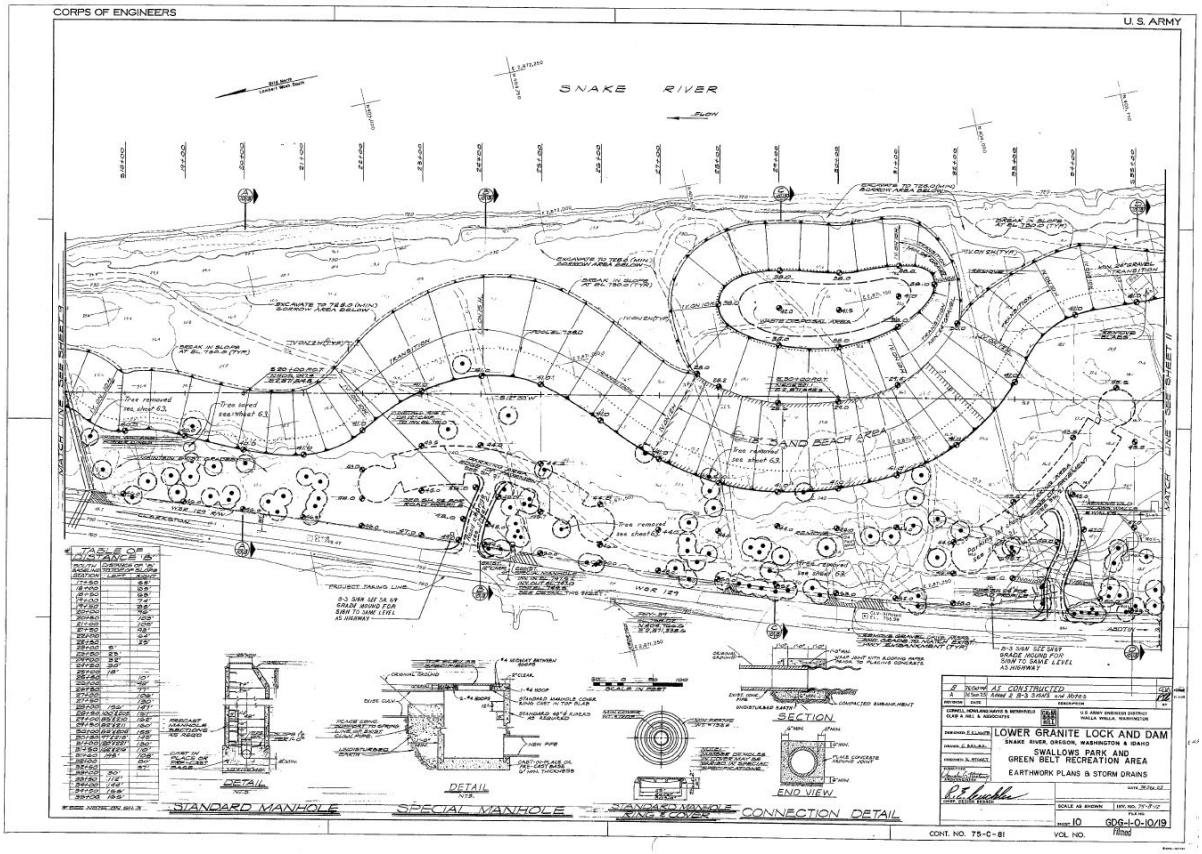

Figure 8. Swallows Beach "As Constructed" Map from October 1976.

Figure 9. Proposed New Beach Location, Alternative 3 at Swallows Park.

Figure 10. Proposed Pool Fill Location, Alternative 4 at Swallows Park.

2.2.5 Alternative 5 (Combined Alternatives 3 and 4-Proposed Action)

Alternative 5, the Proposed Action, is a combination of Alternatives 3 and 4. It would create a new beach access at the downstream (north) end of the existing offshore island and would fill the existing shallow pool (Figure 11). The beach area would be approximately one half acre in size and it is estimated that up to 6200 cubic yards of sand would be required to create the new beach. The pool fill area would be approximately two acres in size and it is estimated that up to 22,000 cubic yards of fill material would be required.

A berm at the north end of the existing shallow channel would be constructed to contain high river flows from washing into the new beach and to provide downstream base for the pool fill work. The berm would be constructed such that it would be a few feet above the OHWM elevation of 738 feet. The sand beach would be contoured from that elevation to approximately 740 feet near the water's edge. Pool filling would start at the north end of the channel and move south as materials become available. The pool would be filled to approximately the same height as the berm, including a cap of top soil. Native vegetation, possibly including grasses, forbs, shrubs, and trees, would be planted on the fill.

Since the island would be accessible, recreational trails with benches and interpretive signs may be established on the island.

Figure 11. Proposed New Beach and Pool Fill Locations, Alternative 5 at Swallows Park.

The proposed action would create a new beach access area for safe public use on the downstream end of the existing offshore island and fill the existing shallow pool to remove the public health and safety hazards associated with it. Work would be accomplished during low water periods by Corps Lower Granite Natural Resource Management Office personnel using heavy equipment such as skidsteers, excavators, or similar equipment. Staging areas would be located as close as possible to the work site and would be situated above the OHWM. It is estimated it would take up to five years to complete. The specific actions to be accomplished in Alternative 5 are:

- During low water, fill would be placed with heavy equipment at the north end of the existing shallow pool. This fill would create a berm to prevent water flow across the new beach site during possible high river levels.
- Approximately 6200 cubic yards of sand fill would be placed with heavy equipment north of the berm between north end of the offshore island and the existing shore to create the new beach. The beach would be contoured from the berm to approximately the 740 foot elevation at the water's edge.
- The existing pool would be filled with heavy equipment to approximately the same height as the berm, moving from north to south as fill material becomes available.
- Native vegetation would be planted over the fill. Plantings may include grasses, forbs, shrubs, and trees.
- Recreational trails with benches and interpretive signs may be established on the existing island.
- Aquatic habitat mitigation actions would be implemented to compensate for impacted areas as described in the mitigation plan being developed.

2.3 Alternative Comparison

Criteria related to the Project Purpose and Need and other operational needs were developed to compare the alternatives. Alternatives were evaluated based on the following criteria:

1. Provide safe public beach access for water recreation.
2. Address public health and safety concerns associated with the existing shallow pond.
3. Requires minimal ongoing operation and maintenance actions after initial construction is completed.
4. Compliant with the Corps Operations: Recreation - Intensive Use land use allocation established in the Lower Granite Master Plan.

Table 1 evaluates the alternatives against the screening criteria.

Table 1. Alternative Screening Evaluation

	Alternative Screening Criteria			
Alternatives	**Provides Safe Public Beach Access**	**Addresses Public Health and Safety Concerns**	**Minimal Ongoing Operations and Maintenance**	**Compatible with Corps Recreation – Intensive Use Mission**
1-No Action	No	No	Yes	No
2-Dredging	Yes	Yes	No	Yes
3-New Beach	Yes	No	Yes	Yes
4-Pool Fill	No	Yes	Yes	No
5-Combined	Yes	Yes	Yes	Yes

Alternative 1 (No Action) would require minimal ongoing operation and maintenance actions because no new actions would occur and existing park maintenance actions would continue. However, it would fail to provide safe, public beach access, would not address public health and safety concerns associated with the existing shallow pool, and would not be compatible with the Corps Operations: Recreation - Intensive Use land use allocation established in the Lower Granite Master Plan. However, CEQ regulations require an analysis of the No Action Alternative for the evaluation of environmental effects of the alternatives on the affected environment, so it is also carried forward for further analysis in Section 3.

Alternative 2 (Dredging) would provide safe, public beach access through the reestablishment of the original beach access location, would address public health and safety concerns associated with the existing shallow pool by dredging accumulated sediment and restoring water flow through the swimming area, and would be compatible with the Corps Operations: Recreation - Intensive Use land use allocation established in the Lower Granite Master Plan. However, it would require extensive ongoing operations and maintenance actions to maintain these conditions. The beach access area, as originally constructed, required regular, ongoing dredging operations every two to four years to maintain desired conditions. Consequently, Alternative 2 was eliminated from further consideration.

Alternative 3 (New Beach) would provide safe, public beach access through the establishment of a new beach location on the downstream end of the offshore island, would require minimal ongoing operation and maintenance actions after initial construction is completed, and would be compatible with the Corps Operations: Recreation - Intensive Use land use allocation established in the Lower Granite Master Plan. However, it would not address public health and safety concerns associated with the existing shallow pool because the pool would remain. Consequently, Alternative 3 was eliminated from further consideration.

Alternative 4 (Pool Fill) would address public health and safety concerns associated with the existing shallow pool by filling it and would require minimal ongoing operation and maintenance actions after initial construction is completed. However, it would fail to provide safe, public beach access and would not be compatible with the Corps Operations: Recreation - Intensive Use land use allocation established in the Lower Granite Master Plan. Consequently, Alternative 4 was eliminated from further consideration.

Alternative 5 (Combined) would provide safe, public beach access through the establishment of a new beach location on the downstream end of the offshore island, would address public health and safety concerns associated with the existing shallow pool by filling it, would require minimal ongoing operation and maintenance actions after initial construction is completed, and would be compatible with the Corps Operations: Recreation - Intensive Use land use allocation established in the Lower Granite Master Plan. Consequently, Alternative 5 is carried forward for further analysis in Section 3.

Based on the alternative comparison, Alternatives 2, 3, and 4 were eliminated from further consideration because they do not meet the Purpose and Need or the established screening criteria. Alterative 5 meets the Purpose and Need and the screening criteria and is carried forward for detailed analysis in Section 3. CEQ regulations require an analysis of the No Action Alternative for the evaluation of environmental effects of the alternatives on the affected environment, so it is also carried forward in Section 3.

The Corps, after consideration of potential environmental effects (Section 3); compliance with other applicable environmental laws (Section 4) and any required coordination, consultation and public involvement (Section 5) has, subject to additional public comment on this EA, identified Alternative 5 as its preferred alternative.

SECTION 3.0 - AFFECTED ENVIRONMENT - ENVIRONMENTAL CONSEQUENCES

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 5 (Combined) were carried forward for analysis. Alternative 1 does not propose any specific management actions beyond normal operations and maintenance actions at Swallows Park, while Alternative 5 proposes specific management actions to achieve the Project Purpose and Need and other operational needs. The discussion of environmental consequences evaluates potential effects of proposed Alternative 5 actions on various resources. Although only relevant resource areas are specifically evaluated for impacts, the Corps did consider all resources in the proposed project area and made a determination as to which ones to evaluate. Those resources considered but not evaluated further are shown in Table 2.

Table 2. Environmental Resources not Evaluated Further.

Environmental Component	Explanation
Air Quality	The proposed action occurs within an attainment area and any emissions associated with the work would be expected to be below the de minimis.
Noise	The project area is located in a park location in Clarkston, Washington. The proposed actions would be more than 100 yards from surrounding neighborhoods and are landscapes with shade trees that would buffer noise.
Socioeconomics	The potential socioeconomic impacts of the proposed action are strongly tied to recreational impacts, so these impacts would be the same as the recreational impacts.

3.2 Soils

3.2.1 Affected Environment

The primary soil at the Swallows Beach area is loamy fine sand of the Ewall soil series (Figure 12). Water is the other mapping unit and it is assumed to be underlain by the Ewall soil. The Ewall loamy fine sand is situated on river terraces and is comprised primarily of fluvial deposits mixed with sandy eolian materials. Soil texture ranges from loamy fine sandy in the surface 13 inches to sand texture below that. This soil is excessively drained and has a high to very high saturated conductivity (5.95 to 19.98 inches/hour). This soil series is not listed on the Hydric soil list. The taxonomic classification is a mixed, mesic Typic Xeropsamments.

Figure 12. Soils at Swallows Beach. (Map Unit 27 is Ewall loamy fine sand, 2 to 10 percent slopes, Map Unit 121 is Water).

3.2.2 Environmental Consequences

Alternative 1: No Action

The primary management activities associated with the No Action Alternative would be invasive plant treatments to contain the aquatic invasive plant, purple loosestrife, as authorized under the Walla Walla District Pest Management Program (USACE 2013). Any direct or indirect effects to soil resources would be minor and of a short-term duration.

Alternative 5: Combined Alternative

The Alternative 5 actions associated with the creation of the new beach area on the downstream end of the offshore island and the filling of the existing shallow pool would cover the existing Ewall soil with fill materials. Sand textured materials would be used to create the new beach while a variety of materials, potentially ranging from rock to topsoil, would be used in the filling of the existing shallow pool.

The sandy materials used to create the new beach would create a well-drained ground surface with high infiltration capacity, resulting in a low risk of sedimentation and erosion. The ground surface of the new beach would be above the OHWM so erosive impacts from the Snake River would be negligible.

The materials used to fill the existing shallow pool would create a productive soil layer for the planting of native vegetation. The ground surface of the area would be above the OHWM so there would be minimal risk of erosion to the Snake River. The long-term effects would be positive as native plant communities become established and add organic matter and nutrients to the soil.

3.3 Aquatic Habitats

3.3.1 Affected Environment

Due to its proximity to the Snake River, there are a variety of aquatic habitats present in the Swallows Beach area. Lower Granite Lake fluctuates between the minimum operating pool (MOP) level of elevation 733 feet and the 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, as directed by FCRPS BiOp, FPP, which are updated annually. 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. Figure 13 shows the aquatic habitats present.

Figure 13. Aquatic Habitats Present at Swallows Beach.

The Swallows Beach analysis area is approximately 2.56 acres as delineated in Figure 13. The areas by habitat types is shown in Table 3.

Table 3. Aquatic Habitat Areas at Swallows Beach.

Habitat	Area (acres)
Wetland	0.94
Upland	0.71
Shallow Pool	0.46
Unvegetated Shoreline Mudflats	0.45
Total	2.56

The wetland areas were delineated using the procedures from the USACE Wetland Delineation Manual (USACE 1987) and the Arid West Regional Supplement (USACE 2008). The wetland areas at Swallows Beach are dominated by the aquatic invasive plant, purple loosestrife, which limits the wetland habitat values and functions, but native wetland species including sedges (*Carex sp*.) and rushes (*Juncus sp.*) are also present. The pool is approximately one foot deep during low water periods. The delineated upland areas are below the OHWM but do not contain hydrophytic vegetation or hydric soil characteristics.

3.3.2 Environmental Consequences

Alternative 1: No Action

The primary management activities associated with the No Action Alternative would be invasive and nuisance plant treatments to contain the invasive and nuisance plants, such as purple loosestrife, as authorized under the Walla Walla District Pest Management Program (USACE 2013). These treatments would improve the quality of the existing wetland areas. The shallow pool would continue to fill in with sediment and may convert to wetlands over time. The upland and unvegetated shoreline mudflat areas would likely remain as currently exists.

Alternative 5: Combined Alternative

The management activities associated with Alternative 5 would result in changes to the existing aquatic habitats. The new beach creation would transform the existing wetland and small upland habitats into a sand dominated upland recreational site. Impact minimization measures (IMMs) and best management practices (BMPs) as shown in Appendix A would reduce potential impacts. Aquatic resource mitigation actions, as authorized under 33 CFR Parts 325 and 332 and 40 CFR Part 230, would be implemented as shown in the mitigation plan being developed.

Filling of the shallow pool would transform the existing pool, wetland, and nonvegetated shoreline habitats. After the pool is filled, plantings of native aquatic/palustrine vegetation would be implemented, onsite and/or offsite. These plantings would be done according the plan for compensatory mitigation for the aquatic habitats impacted by the fill activities.

3.4 Vegetation

3.5.1 Affected Environment

Vegetation at the Swallows Beach area is currently dominated by a mixture of managed lawn grasses, invasive plants (especially purple loosestrife), and a variety of planted shade trees (black locust, mulberry, maple, etc.). The offshore island contains a mix of primarily nonnative trees, shrubs, and forbs, though some native willows are present. With the exception of vegetation on the island, most of the area is mowed and maintained for recreational purposes including picnicking and walking.

3.4.2 Environmental Consequences

Alternative 1: No Action

The primary management activities associated with the No Action Alternative would be invasive and nuisance plant treatments to contain the invasive and nuisance plants, such as purple loosestrife, as authorized under the Walla Walla District Pest Management Program (USACE 2013). These treatments would improve the vegetative composition of the existing wetland areas, allowing native wetland species, such as sedges and rushes, to increase. The shallow pool would continue to fill in with sediment over time and may convert to wetland vegetation over time. The upland and unvegetated shoreline mudflat areas would areas likely remain as currently exists, though over time wetland vegetation may move into the mudflat areas.

Alternative 5: Combined Alternative

The management activities associated with Alternative 5 would result in changes to the existing aquatic habitats. The new beach creation would transform the existing wetland and small upland habitats into a sand dominated upland recreational site. IMMs and BMPs, as shown in Appendix A, would reduce potential impacts. Aquatic resource mitigation actions, as authorized under 33 CFR Parts 325 and 332 and 40 CFR Part 230, would be implemented as shown in the mitigation plan being developed.

Filling of the shallow pool would transform the vegetation of the site. After the pool is filled, plantings of native aquatic/palustrine vegetation would be implemented, onsite and/or offsite. These plantings would be done according the plan for compensatory mitigation for the aquatic habitats impacted by the fill activities. Overall vegetation impacts would be neutral as mitigation plantings would be conducted creating compensatory vegetation communities.

3.5 Wildlife

3.5.1 Affected Environment

The Swallows Beach environment is essentially an urban park with few wildland wildlife species present. Squirrels (*Sciurus sp.*), striped skunks (*Mephitis mephitis)*, several bat species, deer mice (*Peroyscus maniculatus*), American mink (*Neovison vison)*, and common raccoon (*Procyon lotor)*, are common mammals and occasionally mule deer (*Odocoileus hemionus*) and river otters (*Lontra canadensis*) are seen.

A number of waterfowl and shorebird species are present including Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), and spotted sandpiper (*Actitus macularia*). Raptors including eagles, hawks, ospreys (*Pandion haliaetus)*, and owls are occasionally observed. Upland game bird species are present including mourning dove (*Zenaida macroura*) and California quail (*Callipepla californica*). A number of land birds use the Swallows Park area for breeding, foraging, and/or over-wintering habitat.

3.5.2 Environmental Consequences

Alternative 1: No Action

The primary management activities associated with the No Action Alternative would be invasive and nuisance plant treatments to contain the invasive and nuisance plants, such as purple loosestrife, as authorized under the Walla Walla District Pest Management Program (USACE 2013) and control actions on Canada geese taken by US Department of Agriculture (USDA) Wildlife Services personnel. The invasive plant treatments would improve habitat conditions for a variety of wildlife species as native species would increase.

The shallow pool would continue filling in as deposition of river sediments would continue. The shallows at the upstream end of the offshore island would receive more sediment, creating more shallow water habitat. These actions would improve habitat for wildlife species utilizing wetland and shallow water habitats.

Alternative 5: Combined Alternative

The Alternative 5 actions associated with the creation of the new beach area on the downstream end of the offshore island and the filling of the existing shallow pool would eliminate existing aquatic wildlife habitats, impacting wildlife species utilizing those areas. The new beach creation would transform the existing wetland and small upland habitats into a sand dominated upland recreational site. Impact minimization measures (IMMs) and best management practices (BMPs) as shown in Appendix A would reduce potential impacts. Aquatic resource mitigation actions, as authorized under 33 CFR Parts 325 and 332 and 40 CFR Part 230, would be implemented as shown in the mitigation plan being developed.

Filling of the shallow pool would transform the wildlife habitat of the site. After the pool is filled, plantings of native aquatic/palustrine vegetation would be implemented, onsite and/or offsite. These plantings would be done according the plan for compensatory mitigation for the aquatic habitats impacted by the fill activities. Overall wildlife impacts would be minimal as mitigation plantings would be conducted creating compensatory wildlife habitat.

3.6 Fisheries

3.6.1 Affected Environment

The Snake River is home to 35 native fish species including both resident and anadromous species. Lower Granite Lake in the vicinity of Swallows Beach 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

steehead (*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. Potential effects to fish species listed under the Endangered Species Act (ESA) are discussed in section 3.7.

3.6.2 Environmental Consequences

Alternative 1: No Action
Under the Non Action Alternative, the existing shallow pool would continue filling in as deposition of river sediments would continue. The shallows at the upstream end of the offshore island would receive more sediment, further filling in the shallow area. The pool was measured to be approximately one foot deep in July 2016 with temperatures exceeding 90 degrees, so habitat for fish species is minimal to essentially nonexistent in summer months because of baseline conditions.

Alternative 5: Combined Alternative
The Alternative 5 actions associated with the creation of the new beach area on the downstream end of the offshore island and the filling of the existing shallow pool would eliminate what fish habitat currently exists, albeit limited. The current value of fish habitat has been determined to be minimal due to shallow waters and high summer temperatures that have developed over the past 15 to 20 years as sedimentation has occurred in both locations.

Construction work would occur during the low water period (approximately April 1 through September 1), so it is unlikely that any fish species would be present in the shallow pond at that time. Any fish present in the vicinity would likely avoid the area. There is the possibility of some fish habitat being lost during the winter months when water depth currently is higher, but the negative impacts are expected to be minimal due to the abundance of alternate habit areas of higher quality.

3.7 Threatened and Endangered Species

3.7.1 Affected Environment
Seven species listed as threatened or endangered species under the Endangered Species Act (ESA), were identified as having the potential to be affected by the Swallows Beach Restoration project: Snake River spring/summer Chinook, Snake River fall Chinook, Snake River sockeye, Snake River Basin steelhead, Columbia Basin bull trout, yellow-billed cuckoo (*Coccyzus americanus*), and Spalding's catchfly (*Silene spaldingii*). Detailed information regarding the potential effects to these species and the measures to protect their habitat are presented in the Biological Assessment (BA) in Appendix B.

Snake River Spring/Summer Chinook: Spring/summer Chinook salmon and associated critical habitat are listed as threatened under ESA. Adult spring/summer Chinook use the lower Snake

River as a migratory corridor to access the headwater streams where they spawn. Juveniles then use the river on their journey from their spawning and rearing streams to the ocean.

Snake River Fall Chinook: Fall Chinook salmon and associated critical habitat are listed as threatened under ESA. Snake River fall Chinook spawn in the Snake River well above the Swallows Beach area, as well as some limited spawning downstream of the Lower Snake River dams. The proposed area is off channel and any gravels are covered with several feet of silt.

Snake River Sockeye: Sockeye and associated critical habitat are listed as threatened under ESA. Sockeye utilize the lower Snake River as a migratory corridor both for adults travelling upstream to spawning areas and for juveniles on the out migration from those spawning areas. The Swallows Beach area is off the main channel and is little used by Snake River sockeye.

Snake River Basin Steelhead: Steelhead trout and associated critical habitat are listed as threatened under ESA. Very little information is documented on near-shore habitat use by juvenile steelhead in the main stem 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. However, the habitat at the site is highly marginal, lacking depth, woody debris, and vegetation.

Columbia Basin Bull Trout: Bull trout and associated critical habitat are listed as threatened under ESA. The mainstem Snake River is designated as foraging, migration, and overwintering critical habitat for bull trout. Bull trout are not expected to be in the action area due to the lack of foraging, and hiding habitat. Juvenile bull trout may occasionally use the action area for overwintering.

Yellow-billed Cuckoo: The yellow-billed cuckoo, in the western portion of North America, are listed as threatened under ESA. Critical habitat has been proposed, though Washington is not included in the designation. This bird prefers open woodlands with clearings and 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 understory (Taylor 2000). The species was rare east of the Cascade Mountains in these States. It may now be extirpated from Washington (USFWS 2008).

Spalding's Catchfly: Spalding's catchfly is listed as threatened under ESA and no critical habitat has been listed. Spalding's catchfly is endemic to the Palouse region of south-east Washington and adjacent Oregon and Idaho. This species is found predominantly in the Pacific Northwest bunchgrass grasslands and sagebrush-steppe, and occasionally in open-canopy pine stands.

3.7.2 Environmental Consequences

Alternative 1: No Action
The No Action Alternative would have no effect on any of the ESA listed species potentially occurring in the Swallows Beach area. Little habitat exists for any of the anadromous ESA fish species or the listed bird or plant species.

Alternative 5: Combined Alternative
The seven threatened species identified as having the potential to occur in or near the Swallows Beach project area were evaluated in the Biological Assessment in Appendix B. Potential effects of Alternative 5 actions on ESA listed species are:

Snake River Spring/Summer Chinook: Juveniles use the river on their journey from their spawning and rearing streams to the ocean. Filling in the pool is not likely to adversely affect the migration corridor for spring/summer Chinook

Snake River Fall Chinook: The proposed project area is off the main Snake River channel and any gravels are covered with several feet of silt. Therefore the proposed action would have no effect to spawning sites. The area is closed off for over 90 percent of its perimeter, resulting in turbidity caused by the filling of the site staying in the area. The proposed action is not likely to adversely affect freshwater spawning sites.

Snake River Sockeye: The proposed project area is off the main channel and is little used by Snake River sockeye. The proposed action is not likely to adversely affect the migration corridor for Snake River sockeye.

Snake River Basin Steelhead: 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. However, the habitat at the site is highly marginal, lacking depth, woody debris, and vegetation. The proposed action is not likely to adversely affect freshwater rearing sites.

Columbia Basin Bull Trout: Bull trout are not expected to be in the Swallows Beach area due to the lack of foraging, and hiding habitat. Of the nine factors for bull trout critical habitat the only one that may be affected by this action would be migration habitats. Juvenile bull trout may use the action area for overwintering. The proposed action is not likely to adversely affect migration habitats for bull trout.

Yellow-billed Cuckoo: The species was rare east of the Cascade Mountains and it may now be extirpated from Washington (USFWS 2008). There are no known occurrences of yellow-billed cuckoo in area of this proposed action and the habitat at the park would not support them. Therefore, the proposed action will have no effect on any individuals of this species or its proposed habitat.

Spalding's Catchfly: No Spalding's catchfly were found on any Corps lands between Lyon's Ferry at river mile 59 upstream to Asotin Slough at river mile 147, and on the Clearwater River upstream of the confluence with the Snake River to RM 8.2 on the Clearwater during a 2008 vascular plant survey on Corps lands in the upper Snake River (Bailey 2008). There are no known local populations of Spalding's catchfly in the Swallows Park area and the habitat at the park would not support this plant. Because there are no known Spalding's catchfly in the project area there will be no effect to any individual plants of this species**.**

ESA Summary: The Corps has concluded that the proposed action ***may affect, but is not likely to adversely affect*** SR spring/summer Chinook, SR fall Chinook, and SR sockeye, and SRB steelhead, and is ***no effect*** for Columbia Basin bull trout. The Corps has concluded that the proposed action ***may effect,*** *but is* ***not likely to adversely affect designated critical habitat*** for any of the fish species found in the action area. . The action is ***no effect*** to USFWS listed species, yellow-billed cuckoo and Spalding's catchfly.

Table 4 summarizes the effects of proposed Alternative 5 actions on the listed species.

Table 4. Alternative 5 Effects on ESA-Listed Species.

Species	Species Determination	Critical Habitat Determination
NMFS		
SR Spring/Summer Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
SR Fall Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
SR Sockeye	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
SRB Steelhead	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
USFWS		
CB Bull Trout	No Effect	May Affect, Not Likely to Adversely Affect
Yellow-Billed Cuckoo	No Effect	No Effect
Spalding's Catchfly	No Effect	None Designated

Letters from the National Marine Fisheries Service and the US Fish and Wildlife Service in Appendix B concur with the Corps determinations of "may affect, not likely to adversely affect" the listed species or designated critical habitat that may be affected, and the Corps determined there would be "no effect" for those species and habitats not affected, which also means that there are no significant impacts on threatened or endangered species or their habitats from the proposed action.

3.8 Cultural Resources

3.8.1 Affected Environment

Nez Perce people have lived in the Lewiston, Idaho-Clarkston, Washington valley and surrounding areas for thousands of years. Beginning around 1805, Euroamerican explorers, followed later by settlers, entered the area. Several types of cultural resources have been documented on Lower Granite Project lands, including archaeological sites, Traditional Cultural Properties, and isolated finds. There are 160 recorded archaeological sites with the majority related to precontact occupation of the area, and a smaller number dating to the historic period.

They include a variety of site types, including villages and camps, burials, rock imagery, as well as historic sites with remnants of towns, tramway, artifacts scatters, and the like.

Nine sites have been found eligible for or listed on the National Register of Historic Places, and six sites have been found not eligible. While recommendations have been provided for eligibility determinations for many of the other sites, they have not been formally evaluated. Until they are evaluated, they are considered eligible for listing on the National Register.

The Nez Perce Tribe and the Confederated Tribes of the Colville Reservation have interests in cultural resources in the Swallows Beach area. These groups have provided confidential information on TCPs in this area as part of the Federal Columbia River Power System (FCRPS) cultural cooperating group consultation. No archaeological sites, isolated finds, or Traditional Cultural Properties have been identified within the Area of Potential Effect for this undertaking.

A 1917 map shows the project area was once a cultivated field with a structure located just upstream of "Slaughter House Rapid" (USACE 1917). The slaughter house and grazing land was located in Idaho, on the opposite bank. In 1934, the Swallows Beach area is shown as cultivated, with no nearby structures (USACE 1934). A 1956 map shows several structures adjacent to the project area, and several boathouses along the shoreline (USACE 1956). The 1975 as-built map for the swim beach and island show two meandering roads (presumably unpaved) ran through the proposed project area to the river's edge (USACE 1975). An "old foundation" is shown on the map as having been located about 230 feet west of the project area. No structures are shown in the project area in the 1974 reservoir clearing map (USACE 1974).

Swallows Beach, the offshore island, and the shallow pool were created in 1976, as a combination of excavation and fill. The original ground surface at the beach in the project area had an irregular surface ranging from about 728 feet elevation to about 738 feet elevation. The beach was graded smooth to an angle and filled with 18 inches of sand that was borrowed from the "city beach," today known as Chestnut Beach (USACE 1975:TP 2A-20, USACE 1976:Sheet 6). A layer of gravel to a two foot thickness was to be deposited on the slopes and bottom of the shallow pool, unless the native soils were sufficiently gravely. The offshore island was built up to an elevation of 738 to 742 feet elevation using the sediment borrowed from the beach and shallow pool.

Archaeological surveys have been conducted at Swallows Park and in the vicinity on several occasions (Cannell 2001, Wright 2000, Keith 2014). No sites have been found in this area. The ground surface in the park is grassy with minimal ground visibility, and the existing swim beach and offshore island are comprised of fill, while the shallow pool has infilled with redeposited sediments. There are no undisturbed surfaces in the project area. No excavation is proposed, only filling of the shallow pool and creation of a new beach, with all sediment procured offsite.

3.8.2 Environmental Consequences

Alternative 1: No Action

The No Action Alternative would have no effect on cultural resources in the Swallows Beach area. Sediment would continue to accumulate in the shallow pool, and the Corps would continue

to treat the exotic and invasive plant infestations in this area. No cultural resources have been identified during prior surveys in this area, and the undertaking would have no effect on cultural resources.

Alternative 5: Combined Alternative
The Combined Alternative would have no effect on cultural resources in the Swallows Beach area. No archaeological sites have been discovered during prior surveys in this area. Alternative 5 action would involve placement of fill material in the shallow pool and creation of a new beach. Nature trails may eventually be constructed to include visitor access to the offshore island. No cultural resources have been identified during prior surveys in this area, and the undertaking would have no effect on cultural resources.

3.9 Recreation

3.9.1 Affected Environment
Swallows Park is a popular recreation site for the Clarkston, Washington, Lewiston, Idaho area, providing day-use facilities and boating access on the Snake River. Picnic tables, a large covered shelter, boat ramp and dock, restroom facilities, multi-purpose trails, grills, playground, volleyball courts, and other facilities are available. A large beach was constructed during the original park development in 1976 and was heavily used until 2000 when it was closed due to shallow waters and associated public health and safety concerns. Recreational use declined with the closure of the beach, but recreational use is still estimated at over 100,000 visitors annually.

3.9.2 Environmental Consequences

Alternative 1: No Action
Under the No Action Alternative, the existing shallow pool would continue filling in as deposition of river sediments would continue. The pool was measured to be approximately one foot deep in July 2016 with temperatures exceeding 90 degrees creating stagnant conditions with unsafe levels of fecal coliform bacteria. These conditions would get worse under the No Action Alternative.

Treatment of invasive plant species, primarily purple loosestrife, as authorized under the Walla Walla District Pest Management Program (USACE 2013) would improve walking conditions along the shoreline creating a minor beneficial recreational impact.

Alternative 5: Combined Alternative
The Alternative 5 actions associated with the creation of the new beach area on the downstream end of the offshore island and the filling of the existing shallow pool would restore a beach access for swimming that has not existed since approximately 2000. This action would have major, beneficial, localized impacts, greatly increasing the recreational opportunities and use of Swallows Park, restoring the recreation mission to its intended potential. Filling the existing shallow pool with its associated health and safety hazards would also improve recreational use at Swallows Park.

The creation of compensatory aquatic resources, either onsite or offsite, as required mitigation for the filling of aquatic habitats, would create new wildlife habitat and associated recreational viewing opportunities.

The increased opportunity for recreational use would attract visitors from the surrounding communities creating major economic benefits to the area.

3.10 Climate Change

3.10.1 Affected Environment

The proposed project area includes a variety of resources that could be affected by climate change. Within the Inland Northwest, the climate is trending towards warmer temperature and drier conditions.

Predicted changes in temperature and precipitation will continue to decrease snow pack, and will affect stream flow and water quality throughout the Inland Northwest region. Warmer temperatures will result in more winter precipitation falling as rain rather than snow throughout much of the Inland Northwest, particularly in mid elevation basins where average winter temperatures are currently near freezing. The predicted changes will result in:

- Less winter snow accumulation
- Higher winter streamflows
- Earlier spring snowmelt
- Earlier peak spring streamflow and lower summer streamflows in rivers that depend on snowmelt (most rivers in the Inland Northwest).

The decline of the regions snowpack is predicted to be greatest at low to middle elevations due to increase in air temperature and less precipitation falling as snow. The average decline in snowpack in the Cascade Mountains of Washington and Oregon was about 25% of the last 40 to 70 years, with most of the decline due to the 2.5 degrees F increase in cool season air temperatures over that period. As a result, seasonal stream flow timing will likely shift significantly in sensitive watersheds (Littell et al., 2009).

3.10.2 Environmental Consequences

Alternative 1: No Action

There would be no direct impacts of the No Action Alternative on climate change, but climate change may negatively impact conditions at Swallows Beach. Increasing water temperatures would contribute to health and safety hazards at the existing shallow pool.

Alternative 5: Combined Alternative

There would be negligible effects of Alternative 5 actions on climate change, and climate change impacts would also be negligible.

3.11 Summary of Environmental Consequences

Table 5. Summary of Environmental Effects of the Two Alternatives.

Resource Area	Alternative 1 (No Action)	Alternative 5 (Combined)
Soils	Any direct or indirect effects to soil resources from invasive plant treatments would be minor and of a short-term duration.	The sandy materials used to create the new beach would create a well-drained ground surface with high infiltration capacity, resulting in a low risk of sedimentation and erosion. The materials used to fill the existing shallow pool would create a productive soil layer for the planting of native vegetation. The long-term effects to the soil would be positive as native plant communities become established and add organic matter and nutrients to the soil.
Aquatic Habitats	Invasive plant treatments would improve the quality of the existing wetland areas. The shallow pool would continue to fill in with sediment and may convert to wetlands over time. The upland and unvegetated shoreline mudflat areas would likely remain as currently exists	Actions associated with this alternative would negatively impact existing aquatic habitats, but compensatory mitigation, onsite and/or offsite, would result in a net benefit to aquatic habitats.

Resource Area	Alternative 1 (No Action)	Alternative 5 (Combined)
Vegetation	Invasive plant treatments would improve the vegetative composition of the existing wetland areas, allowing native wetland species, such as sedges and rushes, to increase. The shallow pool would continue to fill in with sediment over time and may convert to wetland vegetation over time. The upland and unvegetated shoreline mudflat areas would areas likely remain as currently exists.	The management activities associated with Alternative 5 would result in changes to the existing vegetation communities. The new beach creation would transform the existing wetland plant communities into a sand dominated upland recreational site. Compensatory aquatic resource mitigation, onsite and/or offsite, would create new vegetation communities. Overall vegetation impacts would be neutral as mitigation plantings would be conducted creating compensatory vegetation communities.
Wildlife	The invasive plant treatments would improve habitat conditions for a variety of wildlife species. The shallow pool would continue filling in as deposition of river sediments would continue. The shallows at the upstream end of the offshore island would receive more sediment, creating more shallow water habitat. These actions would improve habitat for wildlife species utilizing wetland and shallow water habitats.	The new beach creation would transform the existing wetland and small upland habitats into a sand dominated upland recreational site. Filling of the shallow pool would transform the wildlife habitat of the site. Plantings of native aquatic/palustrine vegetation would be implemented, onsite and/or offsite, according to the plan for compensatory mitigation for the aquatic habitats impacted by the fill activities. Overall wildlife impacts would be minimal as mitigation plantings would compensate for impacted wildlife habitat.
Fisheries	The existing shallow pool would continue filling in as deposition of river sediments would continue. The shallows at the upstream end of the offshore island would receive more sediment, further filling in the shallow area. High summer water temperature would remain, limiting habit for fish species.	The creation of the new beach area on the downstream end of the offshore island and the filling of the existing shallow pool would eliminate existing fish habitat. Any fish present in the vicinity would likely avoid the area. There is the possibility of some fish habitat being lost during the winter months when water depth

Resource Area	Alternative 1 (No Action)	Alternative 5 (Combined)
		currently is higher, but the negative impacts are expected to be minimal due to the abundance of alternate habit areas of higher quality.
Threatened and Endangered Species	The No Action Alternative would have no effect on any of the ESA listed species potentially occurring in the Swallows Beach area.	Proposed Alternative 5 action may affect, but is not likely to adversely affect SR spring/summer Chinook, SR fall Chinook, and SR sockeye, and SRB steelhead, and have no effect on Columbia Basin bull trout. The proposed action may affect, not likely to adversely affect designated critical habitat for any of the fish species found in the action area. . The action is no effect to USFWS listed species, yellow-billed cuckoo and Spalding's catchfly.
Cultural Resources	The No Action Alternative would have no effect on cultural resources in the Swallows Beach area.	Proposed Alternative 5 would have no effect on Cultural Resources in the Swallows Beach area

Resource Area	Alternative 1 (No Action)	Alternative 5 (Combined)
Recreation	The existing shallow pool would continue filling in as deposition of river sediments would continue creating additional health and safety conditions. Treatment of invasive plant species, primarily purple loosestrife would improve walking conditions along the shoreline creating a beneficial recreational impact.	The proposed action would restore a beach access for swimming that has not existed since approximately 2000. This action would greatly increase the recreational opportunities and use of Swallows Park. Filling the existing shallow pool with its associated health and safety hazards would also improve recreational use at Swallows Park. The creation of required compensatory aquatic resources, either onsite or offsite, would create new wildlife habitat and associated recreational viewing opportunities. The increased opportunity for recreational use would attract visitors from the surrounding communities, creating major economic benefits to the area
Climate Change	There would be no direct impacts of the No Action Alternative on climate change, but climate change may negative impact conditions at Swallows Beach. Increasing water temperature would contribute to health and safety hazards at the existing shallow pool.	There would be negligible effects of Alternative 5 actions on climate change, and climate change impacts would also be negligible.

3.12 Cumulative Effects

The National Environmental Policy Act and the Council on Environmental Quality 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.

3.12.1 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:

- Aquatic Habitats
- Recreation

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 various vegetation management 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 Swallows Beach 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).

3.12.2 Geographic and Temporal Scope of Cumulative Effects Analysis

Guidance for setting appropriate boundaries for a cumulative effect analysis is available from CEQ (1997) and 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.

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 6 summarizes the geographic and temporal boundaries used in this cumulative effects analysis.

Table 6. Geographic and Temporal Boundaries of Cumulative Effects Area.

Resource	Geographic Boundary	Temporal Boundary
Aquatic Habitat	Snake River Reach (5 miles upstream and downstream from Swallows Beach	20 years
Recreation	Clarkston, Washington, Lewiston Idaho Metropolitian Area	

The geographic boundary for the cumulative effects analysis for aquatic habitat includes actions taking place in the Snake River reach 5 miles upstream and downstream from Swallows Beach, while recreation cumulative effects are evaluated within the Clarkston, Washington-Lewiston, Idaho Metropolitan area. The timeframe of 20 years was based on a typical planning period for recreation projects. A timeframe of ten years into the future is used for consideration of actions that are reasonably foreseeable to occur. To be reasonably foreseeable, there must be a strong indication that an action/event will occur or be conducted.

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.

3.12.3.1 Past Actions

Most past actions were related to the construction of Lower Granite Lock and Dam and associated facilities in the mid to late 1970's. The construction of the dam resulted in a large reservoir (Lower Granite Lake) being formed with slack water extending up the Snake River upstream of Clarkston, Washington. A variety of recreational sites, including Swallows Park, were created at that time. Other 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.

3.12.3.1.1 Effects of Past Actions on Resources

Aquatic Habitat

Water levels rose behind Lower Granite Lock and Dam and a series of levees were constructed, primarily on the Lewiston, Idaho side of the Snake River. Riparian vegetation was submerged and a new shoreline was established above the previous level. Season fluctuations in the reservoir pool level impacted aquatic communities. New riparian communities became established over time along the higher shoreline.

Recreation

Recreational opportunities dramatically increased with the creation of a large lake. Recreational facilities offering day-use opportunities, picnicking, hiking, boating, camping, hunting, wild viewing and many other activities were developed. Over time, some facilities required increased ongoing maintenance to remain operational. Boat marinas and swimming beaches, including the

Swallows Beach, experienced significant sedimentation and required dredging to remove accumulated sediments.

3.12.3.2 Present Actions

Present actions include regular operation and maintenance activities at other Corps recreational facilities, including Swallows Park. This includes regular treatment of invasive plants as locations are identified.

Another Corps recreational facility, Chestnut Beach, several miles downstream, was renovated in summer 2016 improving safety for beach access to the Snake River.

3.12.3.2.1 Effects of Present Actions on Resources

Aquatic Habitat

Present actions would result in continued sedimentation at Corps operated and other facilities along this reach of the Snake River. Operational maintenance would remove sediment in some of these locations while others, such as Swallows Beach, would continue filling with sediment.

Recreation

Present actions would result in relatively constant levels of recreational opportunities and use in the area. There likely would be increased recreational use at Chestnut Beach for swimming due to the 2016 improvements. Other recreational effects are minor.

3.12.3.3 Reasonably Foreseeable Future Actions

Future actions include small increases in parks in local communities associated with population growth. Regular maintenance would continue at existing facilities.

3.12.3.3.1 Effects of Future Actions on Resources

Aquatic Habitats

The effects of future actions on aquatic habitats would be similar to impacts from past and present actions. Continued sedimentation would occur in Corps and other facilities along this reach and operational maintenance actions would occur in some locations.

Recreation

Future actions would result in relatively constant levels of recreational opportunities and use in the area. Future actions would likely be in response to a recreational demand or need.

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

The Corps construction of the Lower Granite Lock and Dam and associated recreational facilities has had the biggest impact on aquatic habitats and recreational opportunities in the local area in the past, present, and reasonably foreseeable future. The development of dam, reservoir, and associated recreational sites has affected aquatic habitats and recreation throughout the area and will continue to do so into the future.

The local communities of Clarkston and Asotin, Washington and Lewiston, Idaho have coordinated and cooperated with the Corps on numerous joint ventures, such as parks and trails in and adjacent to Corps managed lands, as have other state and private entities.

The Corps has been one of the biggest local providers of water based recreational opportunities in the area and will continue to do so into the future. Corps actions have impacted aquatic habitats in the past, and will continue to so in the future.

SECTION 4.0 - COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

The following paragraphs address the principal environmental review and consultation requirements applicable to the proposed project. Pertinent Federal statutes, executive orders (EO), and executive memorandums are included.

4.1 Laws Considered

4.1.1 National Environmental Policy Act of 1969 (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 is being circulated to agencies 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. If no such impacts are identified during the public review process, compliance with NEPA would be achieved upon the signing of a Finding of No Significant Impact (FONSI). However, if such impacts are identified during the public review, an Environmental Impact Statement (EIS) would be required. Compliance with NEPA would then be achieved upon completion of an EIS and the signing of a Record of Decision.

4.1.2 Endangered Species Act of 1973, As Amended

The Corps prepared a biological assessment in September 2016 in accordance with section 7(a)(2) of the ESA, which analyzed potential effects of management actions on Endangered Species Act listed species and designated critical habitat. The Corps has consulted with the USFWS and NMFS as appropriate, to ensure that the proposed actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their critical habitats. The Corps has sent copies of the BA to the USFWS and NMFS on September 19, 2016 for their review and concurrence. The Corps received concurrence from the USFWS on XX and NMFS on XX.

The Corps has concluded that the proposed action may affect, but is not likely to adversely affect SR spring/summer Chinook, SR fall Chinook, and SR sockeye, and SRB steelhead, and there will be no effect for Columbia Basin bull trout. The Corps has concluded that the proposed action may effect, but is not likely to adversely affect designated critical habitat for any of the anadromous fish species potentially found in the action area. . The action will have no effect on USFWS listed species, yellow-billed cuckoo and Spalding's catchfly.

4.1.3 National Historic Preservation Act of 1966 (NHPA), as Amended

The NHPA of 1966 as amended directs federal agencies to assume responsibility for all cultural resources under their jurisdiction. Section 106 of NHPA requires agencies to consider the potential effect of their actions on properties that are listed, or are eligible for listing, on the National Register of Historic Places. The NHPA implementing regulations, 36 Code of Federal

Regulations (CFR) Part 800, requires that the federal agency consult with the State Historic Preservation Office (SHPO), Tribes and interested parties to ensure that all historic properties are adequately identified, evaluated and considered in planning for proposed undertakings.

Both the No Action alternative and Alternative 5 would have no effect to cultural resources. The project area has been surveyed several times and no cultural resources have been found. As no cultural resources are located in the project area, and placing additional fill material in this disturbed landscape has little to no potential to cause effects on historic properties, then the Corps may document the finding of no potential to cause effects, and proceed without further review (USACE 2009:51). This EA will be provided for information purposes to the Washington SHPO, and Tribal Historic Preservation Officers (THPO) with the Nez Perce Tribe and Confederated Tribes of the Colville Indian Reservation.

4.1.4 Migratory Bird Treaty Act of 1918 (MBTA) As Amended

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 project is in a highly developed and utilized park operated by the Corps. There is already constant human and vehicle activity in the area to which any birds in the area have already acclimated. The proposed action is not designed to take any migratory birds or destroy any active nests. As such, the Corps has determined that there would be no take of migratory birds as a result of the proposed action.

4.1.5 Bald and Golden Eagle Protection Act of 1940

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 not known to nest in the vicinity of Swallows Park, although they have been known to roost and hunt along the Clearwater and Snake River during the winter months. Additionally, work will be conducted at low water during summer months, when winter roosting eagles would not be in the area.

Because the proposed actions would take place in a highly disturbed and developed area when eagles would not be roosting, and because there are no eagle nests in the vicinity, the Corps has determined there will be no disturbance or take of eagles as a result of the proposed action.

4.1.6 Clean Air Act of 1970, As Amended

The proposed actions would be in compliance with the Clean Air Act. Pursuant to Section 176(C) and 309 of the Act, this environmental assessment would be provided to the EPA.

4.1.7 Federal Water Pollution Control Act (Clean Water Act of 1972)

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. The act has been amended numerous times and given a number of titles and codifications.

Section 402 of the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) program, pertains to discharge of pollutants. No pollutants would be discharged into waters of the U.S. by activities proposed in this EA.

Section 402 of the Clean Water Act also regulates ground disturbance that could potentially cause stormwater run-off into waters of the U.S. The proposed action is covered under Section 404 of the Clean Water Act, since it would involve depositing fill material below the ordinary high water mark, so the federal action does not involve activities subject to the Act.

Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States. The proposed action would result in the discharge of fill materials into waters of the US for the creation of the new beach and the filling of the existing shallow pool. An evaluation of the aquatic habitats under Section 404(b)(1) has been conducted and a least environmentally damaging practicable alternative has been identified. A compensatory mitigation plan is being developed to compensate for aquatic resources impacted by the proposed action.

Section 401 of the federal Clean Water Act requires that any federal activity that may result in a discharge to waters of the United States must first receive a water quality certification from the state in which the activity will occur. A request for 401 certification through the Washington State Department of Ecology was made November XX, 2016 and the Corps received certification February XX, 2017.

4.1.8 Fish and Wildlife Coordination Act of 1958

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.

FWCA does not apply for this action. The action area is a manmade feature that was developed for recreation during the construction of Lower Granite Dam. Impacts for construction of the Snake River dams were considered under the FWCA in the Lower Snake River Fish and Wildlife Compensation Plan.

4.1.9 River and Harbors Act of 1899

The action would not involve the construction of any structure in or over any navigable water, but would result in work affecting the course, location, condition, or physical capacity of such waters. Notification under Section 10 of the Act was made November 15, 2016 in conjunction with the request to Washington Department of Ecology for Clean Water Act Section 401 water quality certification.

4.1.10 Magnuson-Stevens Fishery Conservation and Management Act of 1976

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)

The proposed action falls within the Lower Snake-Asotin watershed (17060103), identified as currently accessible, but unutilized historic EFH for Chinook and Coho salmon. While the area is within the overall defined EFH its degraded condition and continued filling in with sedimentation, means that it doesn't function as EFH. Therefore, the Corps has determined the proposed action will not adversely affect EFH.

4.2 Executive Orders Considered

4.2.1 Executive Order 11988, Flood Plain Management, May 24, 1977

This order outlines the responsibilities of federal agencies in the role of floodplain management. Each agency must evaluate the potential effects of actions on floodplains and avoid undertaking actions that directly or indirectly induce development in the floodplain or adversely affect natural floodplain values. Alternatives considered for this project would maintain designed levels of flood damage reduction, and would not further alter the floodplain.

4.2.2 Executive Order 11990, Protection of Wetlands, May 24, 1977

This order directs federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. Section 2 of this order states that, in furtherance of the NEPA, agencies shall avoid undertaking or assisting in new construction located in wetlands unless there is no practicable alternative. Wetland delineation was conducted by a Corps trained wetland delineator and a function and values wetland assessment was conducted. Compensatory wetland mitigation is being developed as part of the aquatic resource mitigation plan.

4.2.3 Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, November 6, 2000

The District offered Government to Government consultation with the Nez Perce and Colville Tribes by letter on November 10, 2016, but no request to consult has been received.

4.2.4 Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001

The proposed action would not impact either migratory bird species or their habitat subject to this EO and the MOU with the USFWS.

4.2.5 Executive Order 13112, Invasive Species, February 3, 1999

This order directs federal agencies to: prevent the introduction of invasive species; detect and control populations of such species; monitor invasive species populations; provide for restoration of native species and habitat conditions in ecosystems that have been invaded; conduct research on the control of invasive species; and promote public education on invasive species. The proposed action would not contribute to the spread of invasive species and would restore native plant species in locations currently dominated by invasive species.

SECTION 5.0 – CONSULTATION AND PUBLIC INVOLVEMENT

5.1 Agency Consultation

The Corps has initiated informal consultation with the USFWS and NMFS for potential effects of the proposed action to ESA listed species. The Corps sent its biological assessment to both agencies on September 19, 2016 for their review and concurrence.

5.2 Public Involvement

The Corps has worked with a number of local individuals, public officials, and interest groups since 1997 to address the health and safety concerns related to the existing beach at Swallows Park, as well as the need to provide safe public beach access. The Corps hosted several meetings of a task force during the late 1990s to obtain public input in developing a solution.

This EA was released for public comments for a 30-day review and comment period from November 15 to December 15, 2016. Upon conclusion of the review period, the District will consider comments received and move forward in the NEPA process with a Finding of No Significant Impact (FONSI) if applicable, or on to the preparation of an Environmental Impact Statement if deemed necessary..

SECTION 6.0 - LITERATURE CITED AND REFERENCED

Cannell, Kevin G. 2002. Results of the Lower Granite Reservoir Cultural Resource Inventory, 2000-2001. Nez Perce Tribe Cultural Resource Program, Lapwai, Idaho.

Council on Environmental Quality (CEQ). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. January 1997. Crecelius, E.A., and O.A. Cotter.

Environmental Protection Agency (EPA). 1999. Consideration of Cumulative Impacts in EPA Review of NEPA Documents. U.S. Environmental Protection Agency, Office of Federal Activities, May 1999.

Environmental Protection Agency (EPA). 2015. Climate Impacts in the Northwest. Website (https://www.epa.gov/climate-impacts/climate-impacts-northwest) accessed October 2016.

Keith, Mary E. 2014. Lower Granite Project Metal Detecting at Parks. U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington.

Littell, J.S., M. McGuire Elsner, L.C. Whitely Binder, and A.K. Snover (eds). 2009. The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate, (PDF 14.1 MB) Climate Impacts Group, University of Washington, Seattle, Washington.

StreamNet 2014. Information retrieved from: http://www.streamnet.org/data/ (October 2016).

U.S. Army Corps of Engineers. 1917. Snake River Ore.-Wash.-Idaho, Surveyed Aug-Oct, 1917, Sheet 48.

U.S. Army Corps of Engineers. 1934. Snake River, Washington-Idaho Mouth to Oregon-Washington Line, Sheet No. 126.

U.S. Army Corps of Engineers. 1956. Lower Granite Lock and Dam, Reservoir Map, Sheet 45.

U.S. Army Corps of Engineers. 1974. Design Memorandum Number 28, Lower Granite Master Plan, Walla Walla District, Walla Walla, Washington, June 1974.

U.S. Army Corps of Engineers. 1974. Lower Granite Lock and Dam Lake Clearing Lake Map Snake River Miles 140.2-142.7.

U.S. Army Corps of Engineers. 1975. Construction Contract, Swallows Park, Marina, and Green Belt Recreation Area. Contract DACW68-75-C-0081.

US Army Corps of Engineers. 1976. Swallows Park and Green Belt Recreation Area Earthwork Plans and Storm Drains, Sheet 10.

U.S. Army Corp of Engineers. 1979. Lower Granite Project Recreation Area Maintenance Dredging. Walla Walla District, Walla Walla, Washington, April 1979.

U.S. Army Corps of Engineers. 2009. Attachment 6: Routine Activities Under this FCRPS Systemwide PA That Do Not Require Section 106 Consultation. Systemwide Programmatic Agreement for the Management of Historic Properties Affected by the Multipurpose Operations of Fourteen Projects of the Federal Columbia River Power System for Compliance with Section 106 of the National Historic Preservation Act.

U.S. Army Corps of Engineers. 2013. Walla Walla District Pest Management Program. Walla Walla, Washington, February 2013.

U.S. Army Corps of engineers. 2014. Lower Snake River Programmatic Sediment Management Plan, Final Environmental Impact Statement, Walla Walla, Washington, August 2014.

U.S. Department of Energy. 1996. Columbia River System Operation Review Final Environmental Impact Statement, U.S. Department of Energy, Bonneville Power

Administration; U.S. Department of the Interior, Bureau of Reclamation; U.S. Department of the Army, North Pacific Division, Corps of Engineers. Publication DOE/EIS-0170.

United States Global Change Research Program (USGCRP). 2009. Karl, T.R., J. M. Melillo, and T. C. Peterson (eds.). United States Global Change Research Program. Cambridge University Press, New York, NY, USA.

U.S. Laws, Statutes, etc. PL 87-874, Flood Control Act of 1962; PL 85-624, The Fish and Wildlife Coordination Act; PL 86-717, The Forest Cover Act; and 5 Code of Federal Regulations, Section 402.12.

Wright, Mona K. 2000. Installation of a Campground Host Pad for Swallows Park. U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington.

APPENDIX A

PROPOSED CONSERVATION MEASURES

Proposed Conservation Measures

The Corps proposes the following conservation measures as part of the proposed action.

A. Impact Minimization Measures

The following impact minimization measures will be implemented by the Corps:

1. All below high water mark work would be conducted during minimum operating pool (MOP) for the reservoir. At MOP there is only one foot of water in the pool. The southern end of the pool has only a small one foot wide stream that enters the pool from the Snake River. Given that the in water work area is completely surrounded except for the small stream that is flowing into the pool, any turbidity can reasonably be expected to stay in the pool. If for some reason turbidity did become a problem a silt fence would be erected on the south side of the pool.

2. Fill would be put into the pool starting at the north end. Given the on-site baseline conditions (i.e temperatures exceeding lethal limits), it is reasonable to assume that any ESA-listed fish would not be present at the time of work. Any other fish in the pool would be able to naturally move out of the south end and into the main stem of the Snake River the moment fill is dumped into the north end.

B. Best Management Practices

Typical types of best management practices would depend on site-specific conditions, but would generally include the following:

1. Construction equipment would be kept in good repair without fuel, hydraulic or lubricating fluid leaks.

2. If leaks or drips would occur, they would be cleaned up immediately.

3. Drip pans would be utilized when vehicles are parked in the park area.

4. Equipment repairs would be performed off the project site.

5. The Corps would make every effort to use environmentally safe chemicals and substances.

6. All equipment would be inspected at a staging area prior to entering or leaving the staging area to prevent the spread of noxious weeds.

7. Noxious weed populations would be treated in accordance with the Corps Integrated Pest Management Plan.

8. If straw would be used for erosion control during construction and restoration activities, only certified weed-free straw used would be allowed.

9. Seeding with native species would be applied to all disturbed ground resulting from the proposed activities.

APPENDIX B

SWALLOWS BEACH BIOLOGICAL ASSESSMENT

US Army Corps of Engineers ®
Walla Walla District
BUILDING STRONG®

SWALLOWS BEACH

CLARKSTON, WA

Lower Granite Project

PM-EC-2016-0007

Biological Assessment
for

Threatened and Endangered Species,
Critical Habitat, and Essential Fish Habitat

Under the Jurisdiction of:
National Marine Fisheries Service
and
U.S. Fish and Wildlife Service

ADMINISTRATIVE RECORD – DO NOT DESTROY

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

September 2016

SUMMARY

This biological assessment (BA) is prepared pursuant to section 7(a)(2) of the Endangered Species Act (ESA) to evaluate effects of filling in the historic swimming area at Swallows Beach and emplacing sand to create a new beach just north of the old swimming area in Clarkston, WA, on listed species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). The area is operated by the U.S. Army Corps of Engineers, Walla Walla District (Corps).

A review of species listed under the ESA and their critical habitats was conducted June 22, 2016. ESA-listed species include, Snake River sockeye, spring/summer and fall Chinook, steelhead, bull trout, yellow-billed cuckoo, and Spalding's catchfly. Critical habitat is designated for each of the fish species and proposed for yellow-billed cuckoo.

The Corps concludes that the proposed activity "may affect, but is not likely to adversely affect" NMFS listed fish species or their critical habitat in the project area. The project will have "no effect" on yellow-billed cuckoo, or Spalding's catchfly. It will have "no effect" on bull trout but "may affect, but is not likely to adversely affect", their critical habitat. 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 Ben Morris, Biologist in the Environmental Compliance Section of the U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7294, or by email at benjamin.w.morris@usace.army.mil.

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Acronyms

BA	Biological Assessment
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
BO	Biological Opinion
CFR	Code of Federal Regulations
CFS	Cubic feet per second
Corps	Walla Walla District, U.S. Army Corps of Engineers
dB	Decibels
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act of 1973, as amended
ESU	Evolutionarily Significant Unit
FCRPS	Federal Columbia River Power System
FPC	Fish Passage Center
FR	Federal Register
FWCA	Fish and Wildlife Coordination Act
GPS	Global Positioning System
HUC	Hydrologic Unit Code
ICBTRT	Interior Columbia Basin Technical Recovery Team
IMM	Impact Minimization Measure
MBTA	Migratory Bird Treaty Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MOP	Minimum Operating Pool
NMFS	National Marine Fisheries Service
PCE	Primary Constituent Element
PIT	Passive Integrated Transponder Tags
RM	River Mile
RPA	Reasonable and Prudent Alternative
SR	Snake River
SRB	Snake River Basin (steelhead)
SRF	Snake River Fall (Chinook)
SRSS	Snake River Spring/Summer (Chinook)
USFWS	U.S. Fish and Wildlife Service

1. Federal Action

1.1 Introduction

The U.S. Army Corps of Engineers, Walla Walla District (Corps), proposes to restore native grass habitat at the historic swimming area location at Swallows Beach between the created island and the main park. Also included in this action is the placement of sand on the north end of the old channel and island, to augment a beach area developing from sediment deposition.

This biological assessment (BA) is prepared pursuant to section 7(a)(2) of the Endangered Species Act (ESA) to evaluate the restoration effects of raising the area between the island and main park, planting native grasses, and the creation of a sand beach area at Swallows Beach, on ESA-listed species and their critical habitats under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS).

1.2 Background/History

The Corps built Swallows Park as part of the Lower Granite Lock and Dam Project. The Lower Granite Master Plan (USACE 1974) categorized Swallows Park as "Operations: Recreation - Intensive Use." This designation is defined as:

> "These lands have been acquired for project operations (generally within 300 feet of full-pool shoreline), and are allocated for use as developed public-use areas for intensive recreation activities by the visiting public, including areas for concession and quasi-public development. Intensive use recreation areas are defined as lands on which facilities have been or will be provided to accommodate the recreation needs of visitors in concentrated numbers, and such adjacent or associated lands without facilities as required for open space purposes to make a whole recreation unit. These lands, including developed facilities thereon, will be administered by the Corps of Engineers, or will be administered under lease agreements by state or local agencies or commercial concessionaires. Private or long-term, exclusive group use of these public recreation lands will not be permitted. Licenses, permits, or easements will not be issued on intensive use recreation lands for such incompatible manmade intrusions as pumping plants, underground or exposed pipelines, cables, overhead transmission lines, nonproject roads, or dredging or filling operations. Exceptions to this restriction may be made where necessary to serve a demonstrated public need in those instances where no reasonable alternative is available. Measures leading to habitat improvement for the benefit of wildlife may be accomplished on intensive-use recreation lands not actually occupied by formal facility development."

The Master Plan projected over 100,000 visitors annually for Swallows Park. Historically, this area saw a great deal of visitor use at the swim area. Over time, those numbers have fallen, due to the beach area silting in.

Lower Granite pool, as with the other pools on the Snake River, are operated in accordance with the FCRPS BiOp. This means that the pool fluctuates between 733-738 msl (the normal operating range), depending on the season. This is determined annually by the Fish Passage Plan (FPP) and Fish Operations Plan (FOP), which are part of the FCRPS BiOp. Normal pool operations generally mean that the pool is run at minimum operating pool (MOP) from April to the end of August, with dates varying (IAW the FPP).

Over the last several years, Lower Granite's pool has been operated higher than normal, in order to accommodate navigation traffic. Dredging operations under the Programmatic Sediment Management Plan (PSMP) in 2014 allowed the pool to return to normal operations (IAW the BiOp) in 2015.

The current condition of the pool is that it is a stagnant 1 foot deep shallow pool during the summer, which is heavily contaminated with fecal coliform from geese. This situation has left it unusable by native fish and people in the area.

After it was first constructed, the swimming area was heavily used by local residents. However the channel has naturally silted in over the years making it unusable for its initial purpose. This natural deposition consisted mainly of fine sediment. Silt continued to fill in the area until the north end of the channel was completely blocked off and filled in as much as 8 feet of the channel from its original depth. The blocking of the channel and subsequent natural sedimentation changed the area from a channel to a stagnant pond.

The north (downstream) end of the channel is completely block off with sediment. The south (upstream) end of the channel is nearly blocked off and there is only one foot of water above the sediment in the pool. Pool temperature in the summer exceed 90°F.

Canada geese (*Branta canadensis*) have also increased significantly at the park. They are found primarily in and around the pool, as they can currently use the "island" as somewhat of a refuge for their young, loiter in the pool, and graze in the park's grassy areas. Fecal material deposited into the pool by geese has increased along with their rising population and is expected to continue to rise in the future.

With high water temperatures, shallow water, and nutrient loads coming in, eutrophic conditions are prevalent.

The cumulative effect on the area resulted in the swimming area becoming unsafe and unusable for visitors around 2001. This has continued to impact the Corps' mission in the area, and needs to be addressed.

1.3 Project Purpose and Objectives

The purpose of the proposed action is to restore the area to a usable recreation area for the public. Use of native grasses in the former beach area will reduce long-term operations and maintenance costs, reduce the grazing and loitering opportunities for Canada geese, and provide a varied experience for the visiting public through wildlife viewing.

Over time, this area would continue to silt in and fill itself. The Corps is proposing to expedite this process in order to eliminate the health and safety concerns.

1.4 Previous Consultation

In April 1979 the U.S. Army Corps of Engineers prepared an Environmental Assessment (EA) on the Dredging of Swallows Park.

Consultation for ESA-listed species under the jurisdiction of the NMFS was completed under the 2008, 2010, and 2014 NMFS Biological Opinions (BO) for the operation and maintenance of the Federal Columbia River Power System (FCRPS). This consultation authorized the Corps to operate and maintain its dams, and associated recreational areas. Over the years the Corps has made many changes to both the structure and operation of its recreational area.

In June 2015, the U.S. Army Corps of Engineers prepared a BA and consulted with USFWS (FWS Ref: 01EIFW00-2015-I-0606, CONS-100(a)) and NMFS (NMFS tracking No. WCR-2015-2933) on the dredging of Hells Gate Marina across and 1 mile up river from Swallows Park.

In 2007 consultation was completed with NMFS (NMFS tracking No. 2007/05875) for rehabilitation of a retaining wall at Chestnut Beach down river from Swallows Beach.

1.5 Proposed Action

The proposed action is the restoration of part of the Swallows Park area, defined by the depressed area between the man-made island and the main park, by filling in and planting native vegetation. Also planned is the development of a beach area on the north end of the old channel and island at Swallows Park, in Clarkston WA.

1.5.1 Project Description

The end state of this project will be filling in the residual pond between the man-made island and existing beach, planting native grasses over the fill, and placement of sand, north of the outlet and man-made island (Figure1).

This project will be divided into six phases that may be completed sequentially or simultaneously. Phase l will be using fill to further raise the already filled and blocked

off area, at the north end of the old channel between the island and main park. Phase II will be filling in the channel between the island and park approximately halfway down the length of the Island. Phase III will be the placement of the sand at the north end of the Island and north of Phase I fill site, to create a beach area. Phase IV will be the continued filling in of the area between the island and main park. Phase V will be the raising of the fill with a top fill suitable for planting. Phase VI will be the creation of trails, and vegetation plantings on the new fill, and the placement of willow and riparian vegetation on the east side of the island just south of the beach area and on the south end of the fill.

1.5.1.1 Project Location

Swallows Beach Park is located on the shores of the Snake River in Clarkston, Washington (46°39'37" North, 117°25'37" West) at River Mile 141 on the Snake River (Figure 1). The park lies within the Lower Snake Hydrological Unit Code [(HUC) 17060103]; Washington Township 11 North, Range 46 East, Section 33.

1.5.1.2 Action Area

The action area is that area consisting of the current beach area, extending over to and including the man-made island east of the park and the immediate north end of the old channel. The action area is estimated to encompass approximately 10 acres. The new beach area will be approximately 0.7 acres and the area between the island and main park will be 3 acres. The actual work area is estimated to be approximately 5 acres (Figure 2).

Figure 1. Overview of Swallows Beach, Clarkston, WA (Image taken June 2015. Note the watered area is completely closed off on the north end and nearly closed off on the south end. It completely closed off a few weeks after the photo was taken)

1.5.1.3 Project Activities

The proposed project would fill in the old swimming area of Swallows Beach, Clarkston, Washington (Figure 2), by using heavy equipment to move the fill into the area and level it in the site. Heavy equipment would also be used to place sand on the north side of the project area. Fill and sand may be stored nearby off site until it can be moved into the project area.

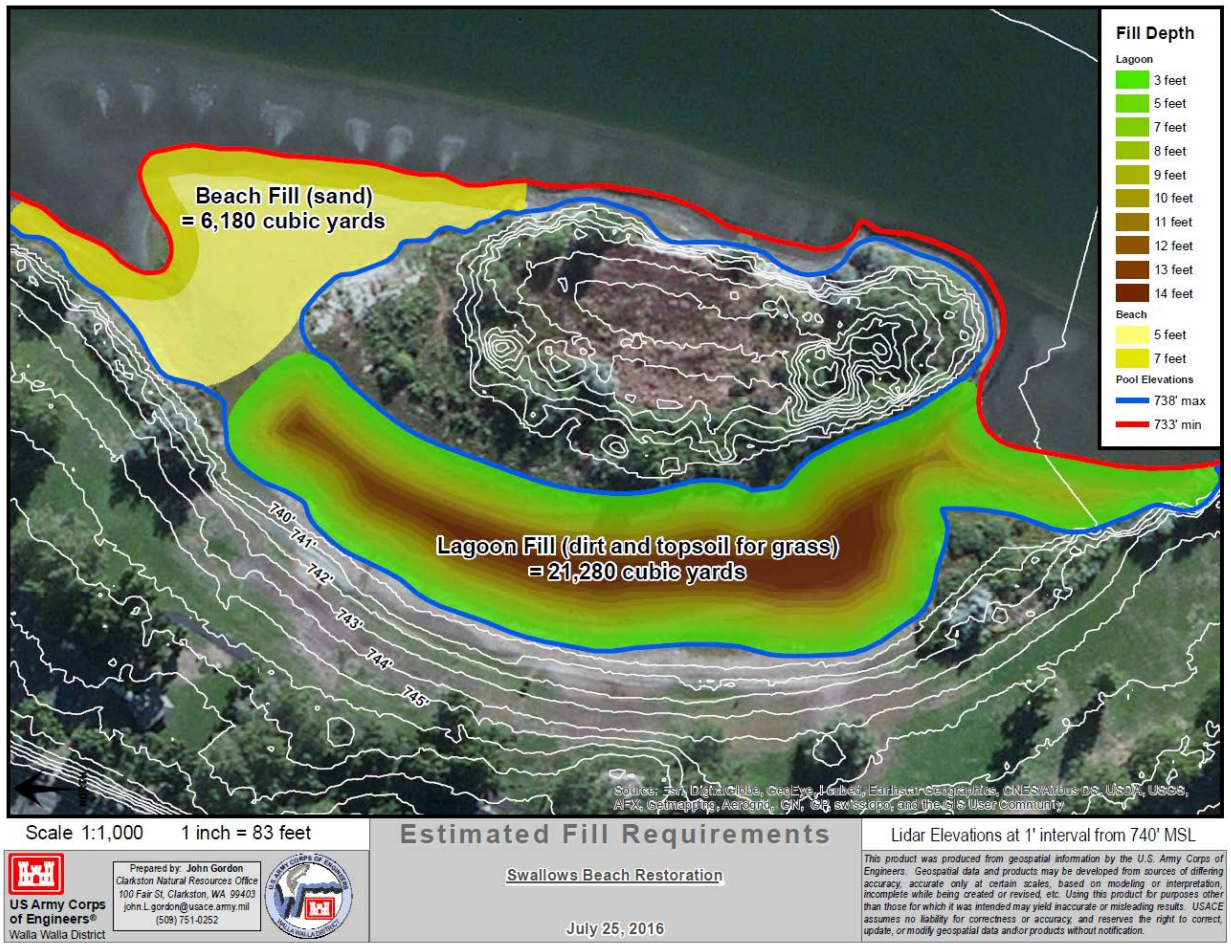


Figure 2. Proposed work areas at Swallows Park. The depths on the diagram above represent the original depths of the lagoon. Sedimentary fill and deposits over the years has already filled in an estimated 8 feet of the lagoon leaving approximately 1 foot of water in the summer at minimum operating pool and 6 feet of water during the winter at maximum operating pool.

Figure 3. View looking north down stagnant stream into Swallows Beach

1.5.1.4 Project Timeline

Construction activity would begin at minimum operating pool (MOP), 733 feet, which is typically around the first of April and run through the end of August.

1.5.1.5 Project Sequence

Only the in-water water work would have potential to affect fish. Over land construction such as placement of sand for the beach area would also occur, but would not impact aquatic life. Following is the construction sequence.

1. Fill would be placed on the existing filled in, and blocked off area at the north end of the old channel.

2. The pool would be filled, starting at the far north side. Additional fill would be added moving the fill continually south until at least half the area was filled.

3. Sand would be placed on the north end of the island, and old channel to enhance the beach area.

4. As additional fill becomes available more fill would be added between the island and main park. The advancement of the filled in area would proceed from the north to the south.

5. After completely filling in the channel area, a top fill up to the 743 foot level would be added. This fill would include a cap of top soil for vegetation growth.

6. Riparian vegetation may be placed at the end to preclude erosion from the main channel. Vegetation would be placed on the south end of the enhanced beach to stabilize the site and stop erosion if necessary.

7. Native grass (i.e. bunch grasses) would be planted over the fill.

8. Trails would be established to and from the beach as well as from the main park over to the island and back.

1.5.2 Proposed Conservation Measures

The Corps proposes the following conservation measures as part of the proposed action.

1.5.2.1 Impact Minimization Measures

The following impact minimization measures will be implemented by the Corps:

1. All below high water mark work would be conducted during minimum operating pool (MOP) for the reservoir. At MOP there is only one foot of water in the pool. The southern end of the pool has only a small one foot wide stream that enters the pool from the Snake River. Given that the in water work area is completely surrounded except for the small stream that is flowing into the pool, any turbidity can reasonably be expected to stay in the pool. If for some reason turbidity did become a problem a silt fence would be erected on the south side of the pool.

2. Fill would be put into the pool starting at the north end. Given the on-site baseline conditions (i.e temperatures exceeding lethal limits), it is reasonable to assume that any ESA-listed fish would not be present at the time of work. Any other fish in the pool would be able to naturally move out of the south end and into the main stem of the Snake River the moment fill is dumped into the north end.

1.5.2.2 Best Management Practices

Typical types of best management practices would depend on site-specific conditions, but would generally include the following.

1. Construction equipment shall be kept in good repair without fuel, hydraulic or lubricating fluid leaks.

2. If leaks or drips do occur, they shall be cleaned up immediately.

3. Drip pans shall be utilized when vehicles are parked in the park area.

4. Equipment repairs shall be performed off the project site.

5. The Corps shall make every effort to use environmentally safe chemicals and substances.

6. All equipment shall be inspected at a staging area prior to entering or leaving the staging area to prevent the spread of noxious weeds.

7. Noxious weed populations will be treated in accordance with the Corps Integrated Pest Management Plan.

8. If straw is used only certified weed-free straw used for erosion control during construction and restoration activities will be allowed.

9. Seeding with native seed shall be applied to all disturbed ground resulting from the proposed activities.

1.5.2.3 Previous and Ongoing Projects in the Action Area

The action area for the proposed project is small; only extending a few meters upstream (south) of the inlet to about 10 meters downstream of the proposed sandy beach area. There are no other previous or ongoing projects that would affect ESA-listed species in the action area.

2. Listed Species

2.1 NMFS Species Listed for the Project Area

Table 1. Species list for project area.

Species	Listing Status	Critical Habitat
Snake River spring/summer-run Chinook salmon (*Oncorhynchus tshawytscha)*	Threatened 6/28/05; 70 FR 37160	6/28/05; 70 FR 37160
Snake River fall-run Chinook salmon (*Oncorhynchus tshawytscha)*	Threatened 6/28/05; 70 FR 37160	6/28/05; 70 FR 37160
Snake River sockeye salmon (*Oncorhynchus nerka*)	Threatened 6/28/05; 70 FR 37160	6/28/05; 70 FR 37160
Snake River Basin steelhead (*Oncorhynchus mykiss*)	Threatened 1/05/06; 71 FR 834	9/02/05; 70 FR 52630
Columbia River bull trout (*Salvelinus confluentus*)	Threatened 6/10/98; 63 FR 31647	9/02/05; 70 FR 56211 10/18/10; 70 FR 63898

2.1.1 Snake River Spring/Summer Chinook

2.1.1.1 Listing History

The Snake River spring/summer (SRSS) Chinook salmon Evolutionarily Significant Unit (ESU), was listed as threatened on April 22, 1992 (67 FR 14653). It includes all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, and Salmon Rivers. Fish returning to several of the hatchery programs are also listed, including those returning to the Tucannon River, Imnaha, and Grande Ronde River hatcheries, and to the Sawtooth, Pahsimeroi, and McCall hatcheries on the Salmon River. Critical habitat was designated for SRSS Chinook salmon on December 28, 1993 (58 FR 68543), and was revised on October 25, 1999 (64 FR 57399).

2.1.1.2 Life History/Biological Requirements

In the Snake River, spring and summer Chinook share key life history traits. Both are stream type fish, with juveniles migrating to sea as yearling smolts. Depending primarily on the location within the basin (and not on run-type), adults tend to return after either 2 or 3 years in the ocean. Both spawn and rear in small, high elevation streams (Chapman et al. 1994), although where the two forms co-exist, spring-run Chinook spawn earlier and at higher elevations than summer-run Chinook.

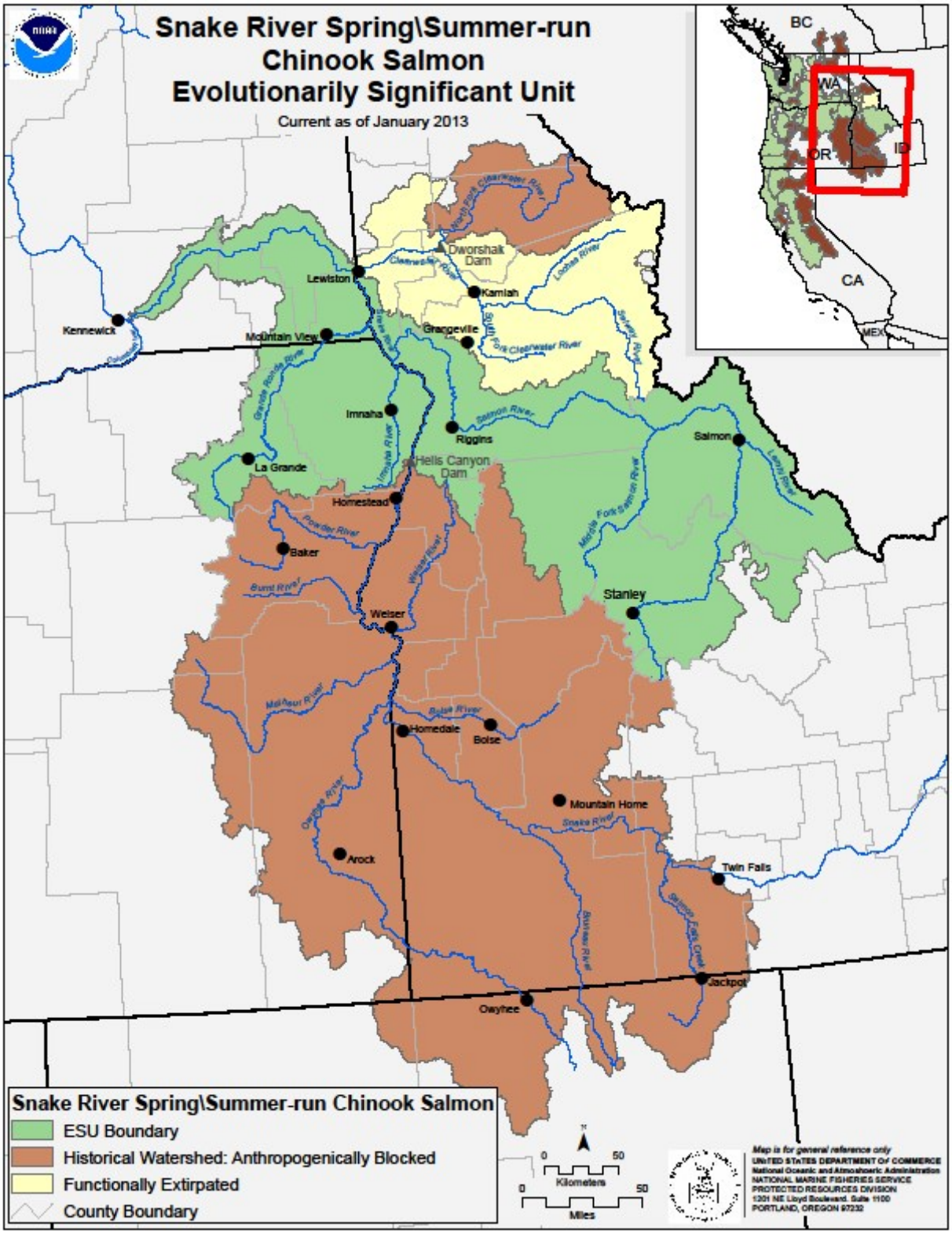
Spring/summer Chinook salmon use smaller, higher elevation tributary systems for spawning and juvenile rearing compared to fall run fish, which spawn in the main stem of larger rivers. Spring/summer Chinook salmon normally spawn in late July–September using gravel bars in smaller river and tributary streams. As with most salmon, adults die after spawning providing a large nutrient source for juvenile fish.

Juvenile spring/summer Chinook salmon behave differently than fall Chinook in that they remain in headwater streams for a year and out–migrate the following spring. Optimal water temperatures range from 59–64°F (14–19°C) with temperatures exceeding 73°F (21°C) being lethal (Wydoski and Whitney 2003). Juvenile Chinook salmon feed on small aquatic invertebrates in both fresh and salt water, primarily arthropods in freshwater and crustaceans in marine environments. As they grow in saltwater, they quickly change to a fish diet (IDFG 2005).

2.1.1.3 Distribution

See Figure 4 for distribution. Based on genetic and geographic considerations, the Interior Columbia Basin Technical Recovery Team (ICBTRT) (2003) established five major population groups in this ESU: the Lower Snake River Tributaries, the Grande Ronde and Imnaha Rivers, the South Fork Salmon River, the Middle Fork Salmon River, and the upper Salmon River. The ICBTRT further subdivided these groupings into a total of 31 extant, demographically independent populations. However, Chinook salmon have been extirpated from the Snake River and its tributaries above Hells Canyon Dam, an area that encompassed about 50 percent of the pre-European spawning areas in the Snake River Basin. In 1927, major subbasins in the Clearwater River Basin were blocked to Chinook salmon by the construction of Lewiston Dam.

Figure 4. SR Spring/Summer Chinook Distribution.



2.1.1.4 Local Empirical Information

Overwintering and early rearing of fall Chinook salmon in Lake Wallula backwater areas has been documented and it will be logical to assume that the potential for overwintering and rearing exists in the lower Snake River as well. Limited sampling has occurred in the lower Snake River demonstrating that individuals of SRSS Chinook salmon may show very limited use of shallow water areas of lower Snake River reservoirs for periods of rearing during the spring outmigration period or overwintering between July and March (Tiffan and Connor 2012; Artzen et al. 2012). Because this ESU is an upriver stock, no spawning habitat is present in the lower Snake River.

Juvenile SRSS Chinook salmon generally migrate through the Snake River during March through July. Most adult SRSS Chinook salmon migrate through the lower Snake River between April and mid-August.

There has been a general increase in the number of adult and jack SRSS Chinook passing over Lower Granite Dam in recent years, with a peak of the number counted in 2001 (192,632). The 10 year average (2006-2015) was 94,629. The previous 10 year average was 64,622 (http://www.nwp.usace.army.mil/Missions/Environment/Fish/Counts/).

2.1.1.5 Ongoing Monitoring

Passage of adult and juvenile Chinook salmon is monitored at the Snake River dams. There are also several other monitoring programs by other federal, state and tribal organizations throughout the watershed.

2.1.2 Snake River Fall Chinook

2.1.2.1 Listing History

NMFS listed SR fall-run (SRF) Chinook salmon as threatened on April 22, 1992 (57 CFR 14653) and their threatened status was reaffirmed on June 28, 2005 (70 CFR 37160).

2.1.2.2 Life History/Biological Requirements

Detailed life history data (age at spawning, sex ratios, etc.) are plentiful for hatchery populations, but limited and inconsistent for wild populations. More data are also available for some subbasins and streams than others, and different types of data are available for different streams at different times. Age at spawning and associated fecundity differ between the adults returning to the Middle Fork and main Salmon Rivers and all other areas where information is available. In these two areas, 3-ocean adults (especially females) with higher fecundity predominate, whereas 2-ocean adults with lower fecundity predominate in other areas. This is in spite of the fact that spring- and summer-run Chinook salmon inhabit parts of both areas. This suggests that geography or other environmental factors are more influential in determining age at return than run-timing (Mathews and Waples 1991).

The generalized life history of Pacific salmon involves incubation, hatching, and emergence in freshwater, migration to the ocean, and subsequent initiation of maturation and return to freshwater for completion of maturation and spawning. Juvenile rearing in freshwater can be minimal or extended. Additionally, some male Chinook salmon mature in freshwater, thereby foregoing emigration to the ocean. The timing and duration of each of these stages is related to genetic and environmental determinants and their interactions to varying degrees. Salmon exhibit a high degree of variability in life-history traits; however, there is considerable debate as to what degree this variability is the result of local adaptation or the general plasticity of the salmonid genome (Ricker 1972, Healey 1991, Taylor 1991).

Juveniles emerge from the gravels in March and April of the following year, moving 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).

Adults return to the Snake River at ages 2 through 5, with age 4 most common at spawning (Waples et al. 1991). Adult SRF 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 main stem and in the lower reaches of large tributaries in October and November.

2.1.2.3 Distribution

SRF Chinook salmon spawning and rearing occurs only in larger, mainstem rivers such as the Salmon, Snake, and Clearwater Rivers. Historically, the primary fall-run Chinook salmon spawning areas were located on the upper mainstem Snake River (Connor et al. 2005). A series of Snake River mainstem dams block access to the upper Snake River, which has significantly reduced spawning and rearing habitat for SRF Chinook salmon. The vast majority of spawning today occurs upstream from Lower Granite Dam, with the largest concentration of spawning sites in the Clearwater River, downstream from Lolo Creek. 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; Mueller and Coleman 2007).

As a consequence of losing access to historic spawning and rearing sites in the upper Snake River, fall Chinook salmon now reside in waters that are generally cooler than the majority of historic spawning areas. In addition, alteration of the lower Snake River by hydroelectric dams has created a series of low-velocity pools in the Snake River that did not exist historically. Both of these habitat alterations have created obstacles to fall Chinook survival. 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 reared in the mainstem Snake River during their first year. Today, fall Chinook salmon in the 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 life history is likely a response to early development in cooler temperatures, which prevents juveniles from reaching a suitable size to migrate out of the Snake River.

While most SRF Chinook salmon spawn above the confluence and navigation lock approach area, a few have been documented periodically (1993 and 1994 in the tailwaters of the lower Snake River dams) spawning within suitable areas of the tailwater environment outside the navigation lock approaches (Bennett et al. 1983, 1992; Dauble et al. 1994, 1995). See Figure 5 for distribution.

2.1.2.4 Local Empirical Information

Adult SRF Chinook numbers passing over Lower Granite Dam have increased in the last several years. The latest 10-year average (2006 – 2015) is 50,459. The previous 10 year average was 11,669 (http://www.nwp.usace.army.mil/Missions/Environment/Fish/Counts/).

Wild juvenile fall Chinook salmon typically pass through the Lower Snake River from mid-June through September, with double peaks in mid-July and some lingering portion of the annual migration lasting until December. Many of the juvenile fall Chinook salmon outmigrating from the Clearwater and Snake Rivers spend time in shoreline areas (less than 3 meters [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). Tiffan and Connor (2012) similarly reported low gradient shoreline areas less than 2 meters (6.6 feet) deep were highly used by naturally produced juvenile fall Chinook salmon. When water temperatures reach about 21.1^{o}C (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).

Though most juvenile Chinook salmon migrate to the ocean as sub-yearlings, passive integrated transponder (PIT) tag detections from 1993 to 1995 brood year juvenile fall Chinook salmon from the Clearwater River were recorded in the spring of 1994 to 1996 at some lower Snake River dams. More PIT-tagged fall Chinook salmon outmigrants were detected in the spring of 1994 and 1995 than in the previous year, while the trend was reversed with the 1995 brood year. It is apparent from these detections that some Clearwater River fall Chinook salmon migrate to the ocean as yearlings, rather than as subyearlings.

The Snake River upper reach, Snake River lower reach, Grande Ronde River, and Clearwater River are recognized as the four major spawning aggregates of Snake River Basin natural fall Chinook salmon upstream of Lower Granite reservoir (ICBTRT 2007). Though treated as one population, temperature during incubation and early rearing fosters life history diversity among the juveniles of the spawning aggregates (Connor et

al. 2002, 2003a). Natural fall Chinook salmon in the Snake River upper reach, typically emerge and enter Lower Granite reservoir as subyearlings earliest followed in overlapping order by natural fall Chinook salmon subyearlings (hereafter, natural subyearlings) from the Snake River lower reach, Grande Ronde River, and finally the Clearwater River subbasin. Passage of natural subyearlings from the four spawning aggregates through the lower Snake River reservoirs is a protracted event (Connor et al. 2002) based on data collected on fish implanted with passive integrated transponder tags (Prentice et al. 1990). Thus, there is large potential for natural subyearlings to use shallow water habitat complexes throughout the spring and summer.

Natural subyearlings most likely enter Lower Granite reservoir as both newly emergent fry and as parr after they have reared upstream in natal riverine habitat. Those fish that enter the reservoir as fry probably locate nearshore areas and reside there as they grow into parr. Fry abundance likely decreases over time due to mortality, recruitment to parr, and as fish move downstream. Natural subyearlings that remain in natal riverine rearing areas upstream of Lower Granite reservoir are believed to progress through four migrational phases including: discontinuous downstream dispersal along the shorelines of the free-flowing river; abrupt and mostly continuous downstream dispersal offshore in the free-flowing river; passive, discontinuous downstream dispersal offshore in Lower Granite reservoir; and, active and mostly continuous seaward migration (Connor et al. 2003b). Thus, the potential for use of shallow water habitat by natural fall Chinook salmon subyearlings is regulated by the dispersal of fry and parr as well as the survival and behavior of fish passing through these two life stages.

Some of the natural and hatchery subyearlings discontinue active migration before or after entering the reservoirs in mid-summer (Arnsberg and Statler 1995). These “reservoir-type” juveniles are primarily natural fall Chinook salmon (Connor et al. 2005) and they feed and grow as they move downstream offshore in reservoirs during fall and winter and into spring when they become yearlings (Tiffan et al. 2012). Winter is a critical season that can greatly influence the survival and behavior of juvenile anadromous salmonids. Fish in small streams limit their winter movement and energy expenditure by seeking nearshore cover and holding (review by Brown et al. 2011). Shallow water habitat in the lower Snake River reservoirs would also be important to overwinter survival of reservoir-type juveniles if they exhibited the behavior of their counterparts that inhabit small streams. However, Tiffan et al. (2012) hypothesized that the need for cover, protection from predators, and energy conservation are met in reservoirs in ways that allow fish more unrestricted movement at lower energetic costs than observed in small streams. Further, the same authors deduced from angling catch data that reservoir-type juveniles are largely pelagic. Furthermore, sampling data, including radio-telemetry efforts, suggests that use of shallow water habitat during the fall and winter by juvenile fall Chinook is limited and that while juveniles passed shallow water habitat sites, relatively few entered them. Radio-tagged fish located during mobile tracking in the winter of 2010 were pelagically oriented, and generally not found over shallow water or close to shore (Tiffan and Connor 2012).

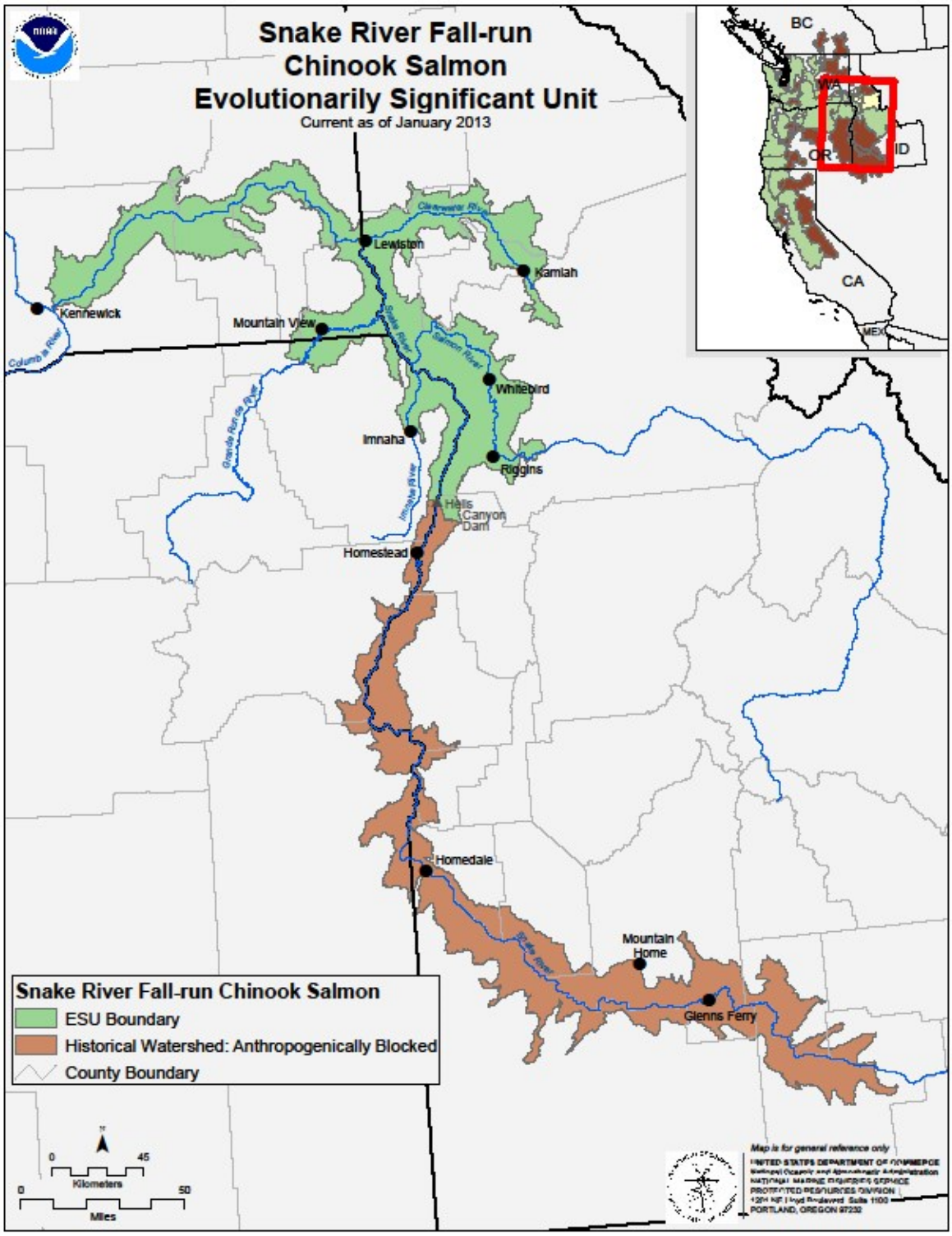
Cold-water releases from Dworshak Dam, aimed at augmenting flows for adult migration, may cause stunted growth rates in juveniles in the late summer and early fall, causing these fish to overwinter. Overwintering and early rearing of fall Chinook salmon in Lake Wallula backwater areas has been documented and it will be logical to assume that the potential for overwintering and rearing exists in the lower Snake River as well.

Redd surveys have been performed in the lower Snake River since at least 1993 (Mueller 2009). For example, seven redds were found downstream of Lower Monumental Dam in 2008 by the Pacific Northwest National Laboratory (Mueller 2009). The redds were located approximately 30 meters (m) (100 ft) downstream of the fish bypass pipe and adjacent to the fish loading dock on the north side of the river in water depths of 4 to 5.5m (13 to 18 ft) with near bottom water velocities of 0.37 to 0.46 m/sec (1.2 to 1.5 feet per second (ft/s)). This was the first time that redds were found at this location (Arnsberg et al. 2009). At Ice Harbor Dam, redd surveys have been performed in multiple years, with only 1 redd found downriver of the powerhouse near the outfall pipe in 1996 and 2 redds found in 2007 390 feet downstream of the bypass pipe in 22-23 feet of water (Mueller and Coleman 2008; Mueller 2009).

The stagnant shallow water and heavy deposits of sediment in the project area precludes spawning in the project site. Chinook require clean gravel provided by moving water to spawn. The limited spawning that does occur in the lower Snake River is in the tailrace areas below all of the lower Snake River dams, where water velocity is high and substrate size is relatively large (Mueller and Coleman 2007, 2008). No redds have been located in other regions of the reservoirs, including shoreline areas such as this project.

Tiffan and Connor (2012) found that reservoir-type juvenile SRF Chinook numbers in Lower Granite reservoir was highest in October and decreased over the fall and winter with the lowest abundance in February. Tiffan and Connor (2012) also found that only 3 percent of the juveniles they found in the winter (November through March) in Lower Granite reservoir were in water less than 20 feet deep and only 7 percent were within 80 feet of shore for short times (less than an hour). Sampling by the USFWS between 1992 and 2000 at a swim beach located 3 miles upstream from the proposed work site, found the highest number of juvenile SRF Chinook were present between April and June (Mitchell 2015). Only a few individuals were found after June during all the years sampled. In some years no individuals were found in July. Therefore, few juvenile Chinook are expected to be near the work area after June.

Figure 5. SR Fall Chinook Distribution.



2.1.2.5 Ongoing Monitoring

Passage of adult and juvenile Chinook salmon is monitored at the Snake River dams. There are also several other monitoring programs by other Federal, state and tribal organizations throughout the watershed. Fish numbers are posted on the fish passage center's website (FPC 2015). Recently there have been significantly higher numbers of fall Chinook since prior to 1975. Use of shallow water habitat by juvenile fall Chinook has been studied for several years as part of assessing placement of dredge materials for creation of shallow water habitat (Gottfried et al. 2011, Artzen et al 2012; Tiffan and Connor 2012).

2.1.3 Snake River Sockeye

2.1.3.1 Listing History

NMFS listed SR sockeye salmon as endangered on April 22, 1992 (57 FR 14653) and their threatened status was reaffirmed on June 28, 2005 (70 FR 37160). The SR sockeye salmon species includes all anadromous and residual sockeye salmon from the Snake River basin, Idaho, as well as artificially–propagated sockeye salmon from the Redfish Lake captive broodstock program (NMFS 2005).

2.1.3.2 Life History/Biological Requirements

Overall age of maturity in sockeye salmon ranges from 3 to 8 years. Male sockeye salmon are capable of maturing at any of 22 different combinations of freshwater and ocean ages, while female sockeye salmon may mature at any of 14 different age compositions (Healey 1986, 1987). Kokanee generally mature after either 2, 3, or 4 years in fresh water. For a given fish size, female sockeye salmon have the highest fecundity and the smallest egg size among the Pacific salmon (Burgner 1991). Average fecundity across the range of sockeye salmon is from 2,000 to 5,200 and from about 300 to slightly less than 2,000 for kokanee (Burgner 1991, Manzer and Miki 1985). Emerging fry possess heritable rheotactic and directional responses that allow fry from outlet tributaries to move upstream and fry from inlet tributaries to move downstream, in order to reach the nursery lake habitat (Raleigh 1967, Brannon 1972, Burgner 1991). Adult body size may also be affected by variations in stock abundance. Based on fishery catch data, which tends to select for larger fish than are present in the total run, Columbia River sockeye salmon average about 1.58 kg after two winters at sea (Gustafson et al. 1997).

2.1.3.3 Distribution

Anadromous sockeye were once abundant in a variety of lakes throughout the Snake River Basin, including Alturas, Pettit, Redfish, Stanley, and Yellowbelly Lakes in the Sawtooth Valley; as well as Wallowa, Payette, and Warm Lakes. However, the only remaining population resides in Redfish Lake.

Federally-listed Snake River sockeye salmon are known to occur in the project area. The lower Snake River corridor is designated as critical habitat for migration of wild SR

sockeye salmon. Critical habitat for rearing or overwintering for Snake River sockeye salmon is not present in the lower Snake River corridor. The components of the migration corridor and run timing of designated critical habitat for juvenile and adult migration passage are present between mid-March and mid-June. No spawning habitat for sockeye salmon is present in the project area. See Figure 6 for distribution.

2.1.3.4 Local Empirical Information

Snake River sockeye adults and juveniles can be found in the Columbia, Snake and Salmon Rivers. Adult and juvenile wild Snake River sockeye salmon are not expected to be present in the mainstem Snake River between July 1 and August 31. Wild Snake River juvenile sockeye salmon generally migrate downriver during April and May, and wild adult sockeye salmon are not typically counted at Ice Harbor Dam before June or after October (Corps Annual Fish Passage Reports, 1980-2011). During sampling in May and June 2002, Bennett et al. (2003) found 21 and 14 juvenile sockeye salmon rearing along shallow-water shorelines in the Lower Granite and Little Goose reservoirs, respectively. Similarly, Artzen et al. (2012) found up to 22 juvenile sockeye at shallow water sample sites in Little Goose and Lower Granite reservoirs from April to July 2011.

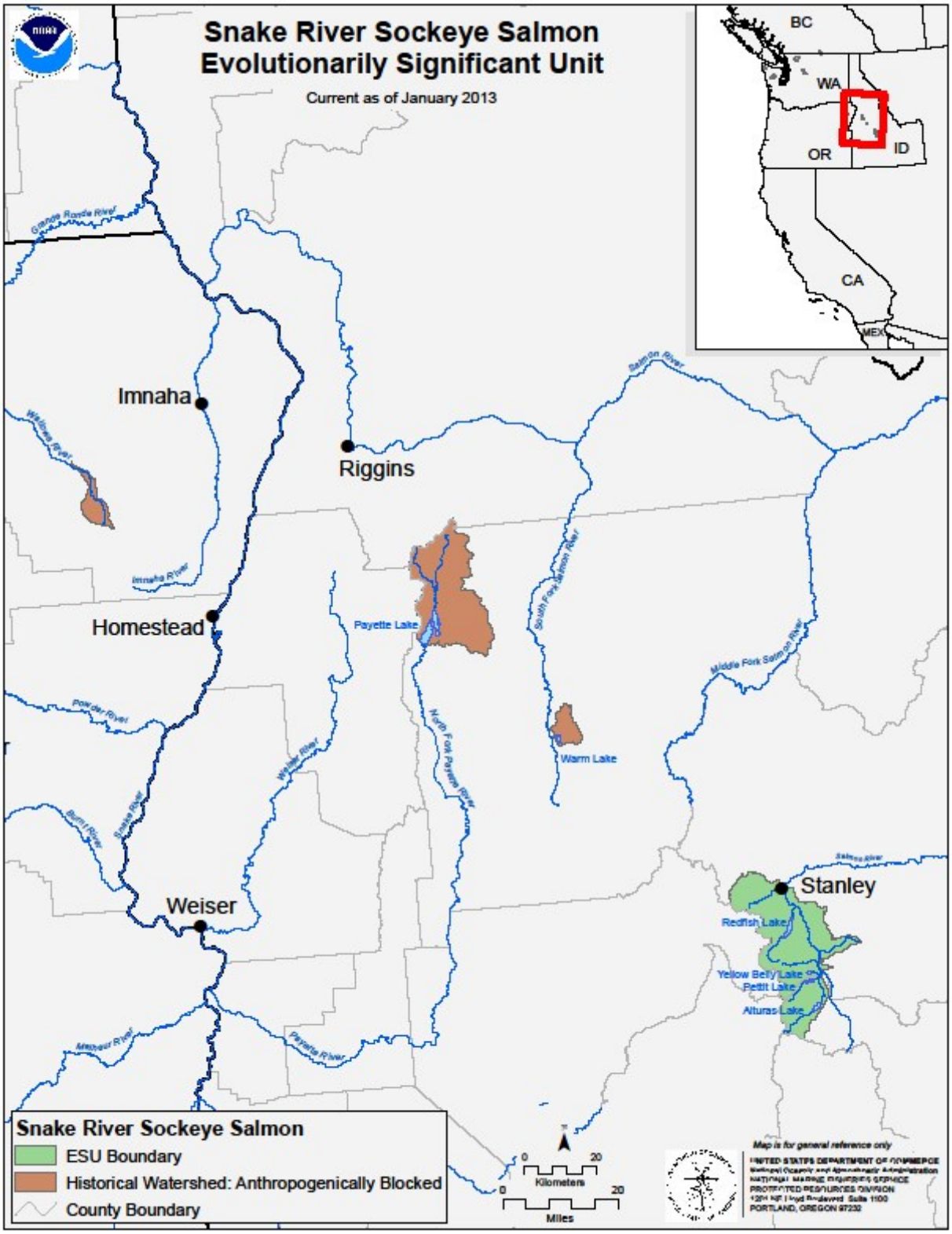
The Snake River sockeye salmon ESU currently consists of Redfish Lake stock in the captive broodstock program at Eagle and Beef Creek hatcheries, and the hatchery fish released from this program into Redfish Lake, Pettit Lake, Pettit Creek and Redfish Lake Creek; wild residual sockeye in Redfish Lake and their out-migrating progeny; any naturally-spawned progeny of broodstock adults released into Redfish Lake; and any adults returning to Redfish or Pettit Lake.

The population of Snake River sockeye salmon is extremely low, but has shown a substantial increase recently. The latest 10-year average (2006-2015) at Lower Granite Dam is 1,035. The previous 10-year (1996-2005) average was 56 at Lower Granite Dam (http://www.nwp.usace.army.mil/Missions/Environment/Fish/Counts/).

2.1.3.5 Ongoing Monitoring

Snake River sockeye salmon are counted at the Corps' Snake River dams. Adults are counted as they move up through the ladders. Juveniles are sampled from the juvenile bypass systems and abundance estimates are made. Additional monitoring takes place in and near the lakes where sockeye spawn and rear.

Figure 6. SR Sockeye Distribution



2.1.4 Snake River Basin Steelhead

2.1.4.1 Listing History

SRB steelhead was listed as 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 SRB of southeast Washington, northeast Oregon, and Idaho, as well as six artificial propagation programs: the Tucannon River, Dworshak NFH, Lolo Creek, North Fork Clearwater River, East Fork Salmon River, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs.

2.1.4.2 Life History/Biological Requirements

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% of total natural-origin production of steelhead in the Columbia River Basin. It now has approximately 63% of the basin's natural production potential.

SRB 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. SRB 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. SRB steelhead are generally classified as summer run, based on their adult run timing pattern. SRB steelhead enter fresh water from June to October, and, after holding over the winter, spawn during the following spring from March to May. SRB 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. Median and 90% passage dates at Lower Granite Dam for PIT tagged groups from the Imnaha River were: wild steelhead trout - May 2 and May 9; and hatchery steelhead trout (NPT and FPC) - May 31 and June 16. Hatchery steelhead trout displayed 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 was a long protracted emigration (Blenden et al. 1996).

Steelhead adult migration preferred temperatures are between approximately 39.2 and 48.2°F (4 and 9°C) (Bell 1990). Steelhead preferred temperatures between 50 and 55.4°F (10 and 13°C), while the upper lethal limit for steelhead is 75°F (23.9°C) (Spence et al. 1996).

With one exception (the Tucannon River production area), the tributary habitat used by Snake River steelhead DPS is above Lower Granite Dam. Annual return estimates are limited to counts of the aggregate return over Lower Granite Dam. Returns to Lower Granite Dam fluctuated widely in the 1980s and remained at relatively low levels through the 1990s. The 2001 run size at Lower Granite Dam was substantially higher relative to the 1990s. The 2002 through 2005 return years declined annually, but continued to remain higher than the 1990s return years. Counts of wild steelhead passing over Lower Granite Dam, which began in 1994, show a marked increase in 2001, then a decreasing trend through 2006, followed by a small increase since that time reaching a peak of 76,161 in 2009 (FPC 2012).

2.1.4.3 Distribution

The SRB 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). SRB steelhead no longer occur above Dworshak Dam. The ICBTRT (2007) identified 26 populations in the following six major population groups (MPGs) for this species: Clearwater River, Grande Ronde River, Hells Canyon, Imnaha River, Lower Snake River, and Salmon River. The North Fork population in the Clearwater River is extirpated. The ICBTRT noted that SRB steelhead remain spatially well distributed in each of the six major geographic areas in the 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. SRB 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.

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 on 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 and its major tributaries.

SRB steelhead are not known to spawn in the impounded reaches of the Snake River, but it is possible that some juveniles overwinter or rear there for short periods. Adult steelhead hold in the mainstem Snake and Columbia Rivers for extended periods (months) prior to spawning and some are likely to be in the action area during the proposed work window (Bjornn et al. 2000). See Figure 7 for distribution.

2.1.4.4 Local Empirical Information

Very little information is documented on near-shore habitat use by juvenile steelhead in the main stem 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.

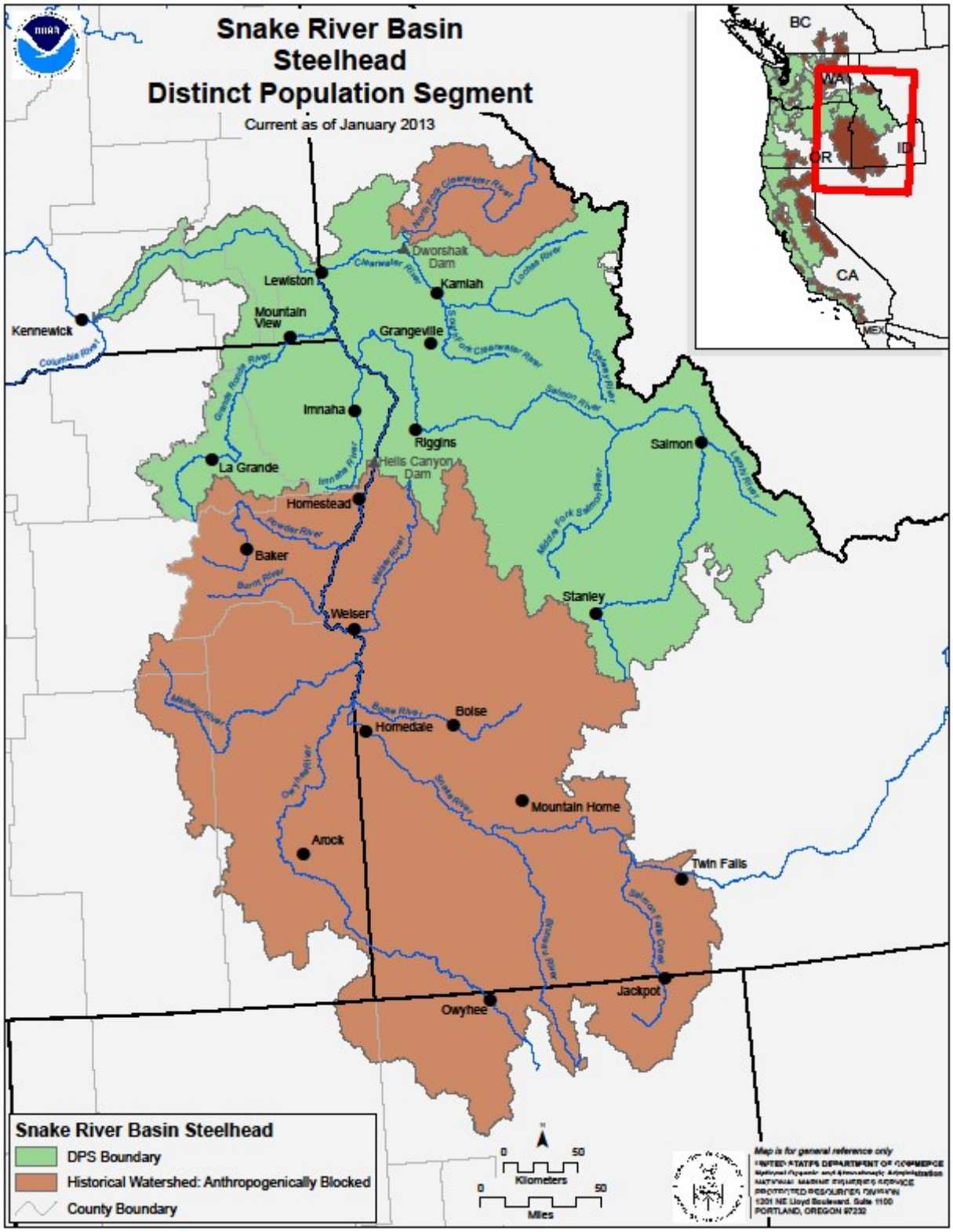
Most wild adult steelhead typically migrate through the reach between June and August for the A-run and between late August and November for the B-run. Adults from this stock may be migrating in deeper water or individuals may be holding in mid-channel areas prior to moving upriver into tributaries for spawning in early spring. Adult wild steelhead numbers passing over Lower Granite Dam have generally increased over the last 15 years. The latest 10 year average (2006-2015) is 53,310. The previous 10 year average (1996-2005) was 28,307 (http://www.nwp.usace.army.mil/Missions/Environment/Fish/Counts/).

Wild juvenile SRB steelhead generally migrate downstream through the lower Snake River, mainly between late March and the end of August. Some rearing or overwintering may occur in the reservoirs.

2.1.4.5 Ongoing Monitoring

Passage of adult and juvenile steelhead is monitored at the Snake River dams. There are also several other monitoring programs by other federal, state and tribal organizations throughout the watershed.

Figure 7. SRB Steelhead Distribution



2.2 USFWS Species Status

The Corps reviewed the list of threatened and endangered species that pertain to the action area under the jurisdiction of the USFWS on 22 June 2016 [USFWS Ref# 01EWFW00-2016-SLI-0975 (Table 2), and determined the proposed action would have "no effect" on the following species: bull trout, yellow-billed cuckoo, and Spalding's catchfly. These species do not occur in the project area. As a result, they will not be discussed in detail.

Table 2. Federal Register (FR) notices for final rules that list threatened and endangered species or designate critical habitats.

Species	Listing Status	Critical Habitat
Bull Trout (*Salvelinus confluentus*)		
Columbia River DPS	T 6/10/98; 63 FR 31647	9/02/05; 70 FR 56211 10/18/10; 75 FR 63898
Yellow-billed Cuckoo (*Coccyzus americanus)*		
Western U.S. DPS	T 10/3/14; 79 FR 59991	11/12/2014; 79 FR 67154
Spalding's Catchfly (*Silene spaldingii*)		
Contiguous U.S. DPS	T 10/10/01; 66 FR 51597	Not applicable

2.2.1 Bull Trout

2.2.1.1 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), Bull trout are currently listed throughout their range in the United States as a threatened species. 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. The Snake River, adjacent to the project area, is designated as bull trout critical habitat.

2.2.1.2 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.

2.2.1.3 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. Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada.

2.2.1.4 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. 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 FCRPS dams, little is known about the number of bull trout within the project 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 two bull trout have been documented by the Smolt Monitoring Program at Lower Granite since 1998 (FPC 2015).

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. http://www.nwp.usace.army.mil/Missions/Environment/Fish/Counts/

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							
2014	1		1	1			
Total	**34**	**28**	**8**	**4**	**7**	**13**	**10**

2.2.1.5 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.

2.2.2 Yellow-Billed Cuckoo

The yellow-billed cuckoo, in the western portion of North America, were listed as threatened on October 3, 2014. Critical habitat has been proposed, though Washington is not included in the designation. This bird prefers open woodlands with clearings and 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 understory (Taylor 2000). In North America, their preferred habitats include abandoned farmland, old fruit orchards, successional shrubland, and dense thickets. In winter, yellow-billed cuckoos can be found in 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 in these States. It may now be extirpated from Washington (USFWS 2008). There are no known occurrences of yellow-billed cuckoo in area of this proposed action and the habitat at the park would not support them. ***Therefore, the proposed action will have no effect on any individuals of this species or its proposed habitat.***

2.2.3 Spalding's Catchfly

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 is endemic to the Palouse region of south-east Washington and adjacent Oregon and Idaho. This species is found predominantly in the Pacific Northwest bunchgrass grasslands and sagebrush-steppe, and occasionally in open-canopy pine stands. Occupied habitat includes five physiographic regions: 1) the Palouse Grasslands in west-central Idaho and southeastern Washington; 2) the Channeled Scablands in east-central Washington; 3) the Blue Mountain Basins in northeastern Oregon; 4) the Canyon Grasslands along major river systems in Idaho, Oregon, and Washington; and 5) the intermountain valleys of northwestern Montana and British Columbia, Canada.

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 2008). There are no known local

populations of Spalding's catchfly in the action area and the habitat at the park would not support this plant. ***Because there are no known Spalding's catchfly in the project area there will be no effect to any individual plants of this species.***

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.

Human activities that have degraded aquatic habitats or affected native fish populations in the Snake River Basin include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, artificial fish propagation, fish harvest, and the introduction of non-native species (Henjum et al. 1994; Rhodes et al. 1994; Spence et al. 1996). In many watersheds, land management and development activities have: (1) reduced connectivity (i.e., the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced the vegetative canopy that minimizes the solar heating of streams; (5) caused streams to become straighter, wider, and either shallower or deeper than their historic or normative condition, thereby reducing rearing habitat and altering water temperature; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables, and base flows (Henjum et al. 1994; Rhodes et al. 1994; Wissmar et al. 1994; Spence et al. 1996).

Although currently fragmented by the presence of dams, the mainstem Snake River provides habitat that may help to maintain interactions between populations in the tributaries. It currently provides for the foraging and overwintering of all ESA-listed Snake River salmonids except sockeye salmon (Table 4), and could provide some spawning habitat for SRF Chinook salmon.

Table 4. Absolute and Relative Quantification of Three Water Depth Habitats in the Lower Granite Reservoir and Snake River During the Early to Mid-1980's.

Pool Reach (RM)	Shallow (<20 ft) Acres (Percent)	Mid-Depth (20-60 ft) Acres (Percent)	Deep (>60 ft) Acres (Percent)	Total Acres (Percent of Total Pool or Reach)
SR107.4 – SR120.46	281 (8%)	1,241 (34%)	2,147 (57%)	3,669 (43%)
SR120.46 - SR146.33	983 (8%)	2,795 (58%)	1,017 (21%)	4,795 (57%)
SR107.4 – SR146.33	1,264 (15%)	4,036 (48%)	3,164 (37%)	8,464 (94%)

Notes:

(1) Estimates calculated from U.S. Army Corps of Engineers cross section profiles.

(2) SR120.46 is the mid-reservoir section where the majority of the fine silt and sand material settles out due to increased rate of depth affecting the slowing rate of water velocity.

3.1 Historic Conditions

Prior to settlement in the late 1800, the proposed project area was historically primarily grass-shrub upland with a narrow riparian strip along the river below. The site changed considerably with the construction and subsequent raising of the water level caused by Lower Granite Lock and Dam. Construction on the Lower Granite Lock and Dam began in the 1960s and was completed in 1975. Waters began filling the reservoir behind Lower Granite Lock and Dam in February 1975.

Part of the overall Lower Granite Lock and Dam Project was the construction of multiple recreation sites along the shores of the newly created reservoir. These projects included marinas and several parks, one of which was Swallows Park. During the construction of Swallows Park a manmade hill was pushed up in front of the park with a water channel between the hill and main park. Sand was brought in to create a recreational swimming area.

3.2 Current Conditions

The current condition of the pool is that it is a stagnant 1 foot deep shallow pool during the summer, which is heavily contaminated with fecal coliform from geese. This situation has left it unusable by native fish and people in the area.

After it was first constructed, the swimming area was heavily used by local residents. However the channel has naturally silted in over the years making it unusable for its initial purpose. This natural deposition consisted mainly of fine sediment. Silt continued to fill in the area until the north of the channel was completely blocked off and filled in as much as

8 feet of the channel from its original depth. The blocking of the channel and subsequent natural sedimentation changed the area from a channel to a stagnant pond.

Surveys done in July of 2016 showed that the north end of the channel was completely block off with sediment. The south end of the channel was nearly block off and there was only one foot of water above the sediment in the pool. A measuring stick was pushed into the sediment with no significant resistance for nearly 3 feet (Figure 3).

Measurements of water temperature were taken on 4 August 2016 at approximately 3:00 pm. The water temperature at the north end of the lagoon was 92 degrees and 88 degrees on the south end near the inlet.

Canada geese have also increased significantly at the park. They are found primarily in and around the pool. Fecal material deposited into the pool by geese has increased along with their rising population and is expected to continue to rise in the future. The situation has reached the point that the coliform counts in the pool are above the level considered safe for humans to enter the water.

The high temperature of the water precludes the pool from being used by salmonids during the summer months.

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 in1997 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 a specific on-site evaluation of current habitat indicators using the MPI within the action area for this project; however, after review of the description of the proposed action, and using the matrix to determine if the potential impacts of the proposed action, the Corps has determined that the proposed action will not restore or

degrade the function of habitat indicators of the environmental baseline, but will maintain existing, not properly functioning, baseline conditions within the action area (Table 5). 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 5. Checklist for Documenting Environmental Baseline and Effects of Proposed Action on Relevant Anadromous Salmonid Habitat Indicators

PATHWAYS	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION		
Indicators	**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. & Dyn.:						
Width/Depth Ratio	X		X		X	
Streambank Cond.					X	
Floodplain Connectivity			X		X	
Flow/Hydrology:						
Peak/Base Flows			X		X	
Drainage Network Increase			X		X	
Watershed Conditions:						
Road Dens. & Loc.		X			X	
Disturbance History		x			x	
Riparian Reserves		X		X		
Watershed Name: Snake River Basin			Location: Clarkston, WA			

3.4 Baseline Condition Justification

The lower Snake River in the action area has been highly altered from its pre-dam condition. As a result many of the parameters below are “not properly functioning.” The specific work area is an artificially created channel.

3.4.1 Water Quality

Water Quality: Temperature – Water temperature in the lower Snake and Clearwater Rivers is not properly functioning. Dams on the Snake River have altered the water temperatures especially during summer and fall. During the summer, when the proposed action will occur, water temperatures are likely to be significantly higher than historic conditions.

Water temperature in the proposed fill area is higher than the main stem of the Snake River, given that it is stagnant and shallow. 2016 temperature measurements showed that the water temperatures averaged around 90°F. The high temperature means that the area is of no value to fish during the summer months.

Water Quality: Sediment – Sediment in the Snake River is not properly functioning. Many factors contribute to the altered sediment processes. The aftereffects of forest fires contribute sand and silt to the river systems, especially from the Salmon River basin. While this is a natural process, the frequency of large fires may be on the increase due to years of fire suppression and climate change. Mainstem dams trap sand and larger sediments, especially in areas such as the upper end of Lower Granite reservoir, near the project area where faster moving water, which can carry sand, meets the slackwater reservoir and loses its ability to carry sediment. Sand and any larger sediments are deposited in these areas in large amounts, causing problems for river navigation.

The specific action area has filled in with several feet of sediment, leaving a small, shallow stagnant pool which precludes fish use.

Water Quality: Chemicals of Concern/Nutrients – The amount of chemicals of concern in the sediments within the action area place this attribute at risk. Various chemicals of concern were detected within the sediments in some locations downstream of the action area. However, modeling results showed that at anticipated river velocities the exposure concentrations would be less than five percent of the NMFS criteria at the conservative mixing zone boundary of 150 ft downstream. The modeling to assess the impact of contaminant transfer from the sediments to the overlying water after 6 months, 5 years, and 50 years demonstrated that nearly all sustained exposure concentrations at an example placement site after construction would be completed would be less than 0.1 percent of the NMFS criteria. Based on the predicted water concentrations within the area, toxicity to fish and tainting of fish tissue is not expected.

The specific action area his highly polluted with fecal coliform from Canada geese in the area.

3.4.2 Habitat Access

Habitat Access: Physical Barriers – Physical barriers in the Snake River make this parameter not properly functioning. A majority of migrating adult and juvenile salmonids can successfully pass the mainstem dams, but passage is sometimes delayed and some fish do not survive the unnatural conditions around the dams. In addition, the slack water reservoirs slow the migration of juveniles which can be detrimental to their survival.

Silt has filled in the north end, and nearly filled in the south end. During low summer flows the site has at times been completely closed off. Any fish caught in the pool when it closes off are at high risk of predation and negative effects of higher temperatures.

3.4.3 Habitat Elements

Habitat Elements: Substrate – The substrate condition in the action area is not properly functioning. The dams have halted the bedload movement of most of the gravel and cobble once transported through the system.

In the work site, sediment has completely covered the bottom, burying areas of gravel and cobble substrate where higher quality food organisms for juvenile salmonids lived.

Habitat Elements: Large Woody Debris - is not properly functioning. The reservoir conditions make what little large woody debris is on the river nonfunctional as salmonid habitat. Most of the existing woody debris is high up on the shorelines or floats down the river and is trapped behind the dams.

Woody debris in the action area is limited, and is precluded from entering the pond by the raised, narrow neck entrance on the south end.

Habitat Elements: Pool Frequency – Pool frequency within the action area is not properly functioning. The slackwater reservoir creates one large pool where many smaller pools intermixed with runs and riffles once occurred.

Habitat Elements: Pool Quality – The pool quality in the action area is not properly functioning.

Cover in the work area pool is provided mainly by water depth as no significant riparian vegetation exists at the pool, and sedimentation has significantly removed water depth as a cover parameter during the summer. The shallow water is polluted with coliform and the pool is unable to connect with the main stem of the Snake River.

Habitat Elements: Off-Channel Habitat – The amount of off channel habitat in the action area is not properly functioning.

While the site is off channel, it was designed and built to be a recreational swim area, and it has filled with sediment to the point it is too shallow for fish habitat the majority of

the year. During times when it is accessible to ESA-listed fish, the habitat value is negligible. The project includes a proposal to try to establish some riparian habitat at the south end of the fill to improve habitat and recreational value at the site.

Habitat Elements: Refugia – The amount of refugia in the action area is not properly functioning.

There is no refugia in the action area. This parameter determination is based off, no woody debris, silt covered substrate, no overhead cover available in and around the pool, and no water depth much of the year.

3.4.4 Channel Condition and Dynamics

Channel Condition and Dynamics: Streambank Condition – The streambank condition in the action area is not properly functioning. Due to fluctuating reservoir levels caused by the dam and heavy sedimentation the stream bank has not established riparian vegetation. The area was also man made and lacks naturally occurring form.

Channel Condition and Dynamics: Floodplain Connectivity – The floodplain connectivity in the action area is not properly functioning. Prior to construction of the Snake River dams, the river had a wide floodplain. With the presence of the dams and the controlled reservoir elevation, the floodplain is dramatically reduced in width.

3.4.5 Flow/Hydrology

Flow/Hydrology: Peak/Base Flows – The peak and base flows in the action area is not properly functioning. The Snake River's peak flow has declined since larger storage Dams were constructed. Likewise baseflow has been increased as stored water is released during dry months of the year.

At the action site the flow has been cut off on the north end and is seasonally completely cut off.

Flow/Hydrology: Drainage Network Increase – The drainage network in the action area is not properly functioning. Cities and towns increase the amount of impervious surface which causes water to run off the land quicker than normal. Plowed agricultural fields do not retain as much water after storms than naturally vegetated land. Snow on clearcut forests may melt sooner causing higher peak flows and lower base flows.

3.4.6 Watershed Conditions

Watershed Conditions: Road Density and Location – The road density and location within the action area is not properly functioning. The presence of roads in the watershed can cause large amounts of fine sediment to erode into the streams and rivers of the watershed. The action area is also dominated by urban areas, with a high density of impermeable surfaces.

Watershed Conditions: Disturbance History – The disturbance history of the watershed is not properly functioning. Many factors have caused disturbance to the Snake River watershed. Agriculture, forestry, road building, and stream channel straightening/altering have had great impacts on the watershed.

Watershed Conditions: Riparian Reserves – The amount of riparian reserves within the watershed is not properly functioning. In the past riparian vegetation was removed along many sections of the Snake River and its tributaries.

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 PCEs of critical habitat.

4.1 Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. The primary potential direct effects of the proposed action would be: 1) Hazards caused by fill entering the pool, 2) temporary generation of suspended sediment and 3) disturbance associated with construction-related activities below the ordinary high water mark. Direct effects may result in disturbance of all life stages that may be exposed, but are not expected to result in a level that would result in take (i.e. harassment, injury or mortality. The previously outlined conservation measures are designed to eliminate or minimize these potential effects.

The proposed action involves the use of large earth moving equipment to bring the fill into the lagoon and distribute it across the area. This action has the potential to bury any juvenile Chinook salmon if they remain in the vicinity when fill occurs. However, it is reasonable to assume that ESA-listed salmonids are not expected to be in the area during the proposed work due to the high water temperatures and shallow water depth during the proposed work window. Beach seining, conducted by the USFWS (1992-2000) approximately 0.5 mile upstream of the project site, observed a peak in the presence of juvenile fall Chinook between late May and mid-June when water temperatures were at or below 16.0^{o}C (Mitchell 2015). Juvenile fall Chinook move offshore when temperatures exceed 18°C. Temperature data from the U.S. Geological Survey indicates that water temperatures for this section of the Snake River would exceed 20°C during the work window for this project. The upper tolerance limit for Chinook is around 24°C. Therefore the likelihood of juvenile Chinook being present in the project area is discountable. Bull trout have lower temperature requirements than other salmonids. High water temperature and minimal depth would preclude bull trout from using the backwater area. Therefore there would be no direct effect on bull trout or their designated critical habitat from this project.

4.2 Indirect Effects

Indirect effects are those that are caused by the proposed action, are later in time, but still are reasonably certain to occur (50 CFR 402.02).

The main indirect effect is the loss of an off channel pool. While the pool is non-functional for habitat during the spring through the late summer time frame, there is the possibility of some use when water depth is higher during the winter months.

Turbidity is not expect to be an impact as the area is already over 90 percent closed off during the proposed work time frame. Any turbidity caused by filling the pool is expected to remain in the pool area.

Sound generated from the operation of the equipment can startle fish or cause them to avoid the area. According the data from the Federal Highway Administration, an excavator generates an actual measured L_{max} at 50 feet of 81 dBA, while dump trucks generate 76 dBA. Ambient noise levels in busy urban areas range from ~59 dBA to 80 dBA. An excavator and dump trucks could be operating at the upper range of the ambient levels and therefore not likely to significantly affect fish or aquatic life in the greater work area, but should ensure that if any fish are still in the immediate site they will move away during the fill operations. However, given baseline conditions (i.e temperature), ESA-listed fish are not likely to be present in the action area.

4.3 Effects on Salmonid Critical Habitat

The action area is located within designated critical habitat for Snake River spring/summer and fall run Chinook salmon, Snake River sockeye, Snake River Basin steelhead and Columbia Basin bull trout. The applicable Primary Constituent Elements (PCEs) were used to evaluate effects to critical habitat for each species (Table 6).

Table 6. Primary constituent elements (PCEs) of critical habitat designated for salmonids.

PCEs		
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.

4.3.1 SnakeRiver Spring/Summer Chinook

4.3.1.1 Freshwater Spawning Sites

There are no spring/summer Chinook spawning sites within the action area. ***No effect.***

4.3.1.2 Freshwater Rearing Sites

Spring/summer Chinook rear in the headwater streams where they are hatched. They spend little time in the lower mainstem Snake River as they out migrate. ***No effect.***

4.3.1.3 Freshwater Migration Corridors

Adult spring/summer Chinook use the lower Snake River as a migratory corridor to access the headwater streams where they spawn. Juveniles then use the river on their journey from their spawning and rearing streams to the ocean. Filling in the lagoon is ***not likely to adversely affect*** the migration corridor for spring/summer Chinook.

4.3.2 Snake River Fall Chinook

4.3.2.1 Freshwater Spawning Sites

Snake River fall Chinook spawn in the Snake River well above the proposed restoration area as well as some limited spawning downstream of the Lower Snake River dams. The proposed area is off channel and any gravels are covered with several feet of silt. Therefore this action would have ***no effect*** to spawning sites. The area is closed off over 90 percent of its perimeter, resulting in turbidity caused by the filling of the site staying in the area. If turbidity appears to be an issue during work at higher flows silt curtains or other protective measures will be used at the north end of the site to confine any turbidity and allow it to settle out within the existing site. Therefore, the proposed action will have ***no effect*** freshwater spawning sites.

4.3.2.2 Freshwater Rearing Sites

Juvenile Snake River fall Chinook rear within the lower Snake River. Surveys by the USFWS approximately 2 miles upstream of the project site found juvenile fall Chinook in the shallow water beach area between April and early July (Mitchell 2015). The shallow water area at the proposed fill site is at its shallowest during this time frame, with only a foot of water at the deepest point. Aquatic vegetation is nearly nonexistent and the habitat condition precludes continual residence in the area for juvenile salmonids. While juveniles may occasionally be present they would not be expected to remain in the site. The proposed action is ***not likely to adversely affect*** freshwater rearing sites.

4.3.2.3 Freshwater Migration Corridors

The Snake River adjacent to the project site is a migration corridor for adult Snake River fall Chinook to spawning sites upstream and for juvenile Chinook out migrating from upstream spawning areas. The area to be restored is off the main channel and will have ***no effect*** on the migration corridor for fall Chinook.

4.3.3 Snake River Sockeye

4.3.3.1 Freshwater Spawning Sites

There are no sockeye spawning sites within the action area. ***No effect.***

4.3.3.2 Freshwater Rearing Sites

There are no sockeye rearing sites within the action area. ***No effect.***

4.3.3.3 Freshwater Migration Corridors

Snake River sockeye utilize the lower Snake River as a migratory corridor both for adults travelling upstream to spawning areas and for juveniles on the out migration from those spawning areas. The area to be restored is off the main channel and is ***not likely to adversely affect*** the migration corridor for Snake River sockeye.

4.3.4 Snake River Basin Steelhead

4.3.4.1 Freshwater Spawning Sites

There are no steelhead spawning sites within the action area. ***No effect.***

4.3.4.2 Freshwater Rearing Sites

Very little information is documented on near-shore habitat use by juvenile steelhead in the main stem 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. However, the habitat at the site is highly marginal, lacking depth, woody debris, and vegetation. The proposed action is ***not likely to adversely affect*** freshwater rearing sites.

4.3.4.3 Freshwater Migration Corridors

Both adult and juvenile steelhead use the lower Snake River as a migratory corridor. The area to be restored is off the main channel and will have ***no effect*** on the migration corridor for Snake River Basin steelhead.

4.3.5 Columbia Basin Bull Trout

The mainstem Snake River is designated as foraging, migration, and overwintering critical habitat for bull trout. Bull trout are not expected to be in the action area due to the lack of foraging, and hiding habitat. Of the nine PCEs for bull trout critical habitat the only one that may be affected by this action would be migration habitats. Juvenile bull trout may use the action area for overwintering. This project is ***not likely to adversely affect*** migration habitats for bull trout.

5.0 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).

Pursuant to MSA §600.905, NMFS recommended in the FCRPS BO (NMFS 2008, 2010, 2014) that the Action Agencies implement the final RPA actions to avoid,

minimize, mitigate, or otherwise offset potential adverse effects of operating the FCRPS.

While the area is within the overall defined EFH its degraded condition and continued filling in with sedimentation, means that it doesn't function as EFH. Therefore, the Corps has determined will not adversely affect EFH as a result of this project.

6.0 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.

FWCA should not apply for this action. The action area is a manmade feature that was developed for recreation during the construction of Lower Granite Dam. The assessment for the impacts from the proposed action would therefore not be to a natural system, but rather to an artificial system whose primary purposes is recreation. Impacts to fish and wildlife have already been evaluated prior to dam construction.

If the wildlife value were to be evaluated, as previously described the current state of the wildlife habitat in the pool is marginal to nonexistent. During the winter months when the reservoir is operating near the 738 foot mark some off stream shallow water refuge may be lost. However, the pool is void of vegetation so no hiding cover is available making use and refuge questionable.

The overall volume impact is minor. At the high water mark the project will fill in approximately 2 acres of surface down to 6 feet deep. At minimum operating pool (MOP) the fill area will be less than a quarter acre and a foot deep.

In the summer months the water is at its lowest point of 733 feet. The water is highly contaminated with fecal coliforms from geese. More importantly the pool is so shallow that solar energy heats it to the point that it is not usable by salmonids.

The area to be filled currently provides habitat for resident Canada geese. These resident geese are generally considered a nuisance and can pose a public health risk. Filling in this small backwater will slightly reduce the amount of Canada goose habitat in the immediate area. However there are other suitable goose habitat areas close by.

There is no significant riparian, especially woody riparian vegetation that exists in the area to be filled. The project includes a proposal to reestablish riparian vegetation on the south end of the pool. Reestablishment of riparian vegetation in this area would have a positive effect on both terrestrial and aquatic wildlife in the area.

7.0 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 will have minor impacts to migratory birds from noise and construction activity disturbance. The operation of equipment is likely to deter some birds from foraging or seeking refuge in the immediate work area, which is already highly disturbed with little or no refuge available (Figure 2). Disturbance may occur in the broader action area [particularly the park to the west (Figure 2)], but this disturbance is not expected to be significantly greater overall than the already existing disturbance caused by park operations and use. The action is not expected to deter most birds from foraging or seeking refuge. The exception is that there are some resident Canada geese that use the Park and backwater area for feeding and loafing. However, there is other goose habitat nearby that they can move into, so the loss of this small amount of habitat will not negatively impact the population.

The project is in a highly developed and utilized park operated by the Corps. There is already significant and constant human and vehicle activity in the area to which any birds in the area have already acclimated. The proposed action will not appreciably add to the human disturbance in the area. No trees will be removed or manipulated by this project. There will be a small amount of resident Canada goose habitat that will be modified to a state that is less suitable to them. The Corps has determined that there will be no take of migratory birds as a result of the proposed action.

8.0 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, Clearwater, and Snake 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.

While eagles and nesting sites have been documented within the extended area around Lewiston, Idaho, and Clarkston, Washington, no known nests, roosting sites, nor significant eagle activities, are located near enough to the project area to be affected by the action.

Roosting or foraging eagles may be present near the action area during the proposed work; however, construction activities are not expected to adversely affect eagles or disturb forage activities as the work area already contains significant human and vehicular activity. Eagles that may occupy this area frequently would be accustomed to the daily activities and related noise levels already present at the park. Construction related noise and activities will be short-termed. In addition, suitable foraging habitat is available in adjacent areas.

Because the proposed actions will take place in a highly disturbed and developed area and because there are ample alternative roosting or foraging sites in the project area, the Corps has determined there will be no disturbance or take of eagles as a result of the proposed action.

9.0 Effects Summary and Determinations

The effect of the proposed action was evaluated based on the potential loss of habitat and individual species responses to potential stressors. The key potential stressors of the proposed action is the disturbance of the water body with sediment during fill, turbidity, and increased sound levels.

A "***no effect***" determination was made for those species or critical habitats that are temporally or spatially separated from potential stressors of the action, and could, therefore, not be exposed to potential stressors or loss of habitat of the proposed action.

A "***not likely to adversely affect***" determination was made for those species or critical habitats unlikely to have a response sufficient to reduce their individual performance, or for effects that were ***insignificant*** or ***discountable***.

The Corps has concluded that the proposed action ***may affect, but is not likely to adversely affect*** SR spring/summer Chinook, SR fall Chinook, and SRB steelhead and is ***no effect*** for Columbia Basin bull trout. The Corps has also concluded that the proposed action is ***not likely to adversely affect designated critical habitat*** for any of the fish species found in the action area.

The action is ***no effect*** to USFWS listed species, yellow-billed cuckoo and Spalding's catchfly.

The summary of species and critical habitat determinations is shown in Table 7.

Table 7. Summary of Determination of Effects on Listed Species and Critical Habitat.

Species	Species Determination	Critical Habitat Determination
NMFS		
SR Spring/Summer Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
SR Fall Chinook	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
SR Sockeye	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
SRB Steelhead	May Affect, Not Likely to Adversely Affect	May Affect, Not Likely to Adversely Affect
USFWS		
CB Bull Trout	No Effect	May Affect, Not Likely to Adversely Affect
Yellow-Billed Cuckoo	No Effect	No Effect
Spalding's Catchfly	No Effect	None Designated
MSA		
No Adverse Effects		
FWCA		
Not Applicable (This is a modification of an historic project)		
MBTA		
No Take		
BGEPA		
No Disturbance or Take		

This project will require further review in order to re-analyze the potential adverse effects on federally protected species or habitats if any significant changes in the action are proposed or occur after the date of this document.

10.0 References

Anglin, DR, D Gallion, MG Barrows, SL Haeseker, RC Koch, and CN Newlon. 2010. Monitoring the use of the mainstem Columbia River by bull trout from the Walla Walla Basin. Final Report to the U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, WA.

Arnsberg, B.D. and D.P. Statler 1995. Assessing summer and fall Chinook salmon restoration in the upper Clearwater River and principal tributaries. Nez Perce Tribe Department of
Fisheries Resources Management, 1994 Annual Report to the U.S. Department of Energy, Bonneville Power Administration. Report DOE/BP/12873-1

Arnsberg, B., A. Garcia, P. Groven, D. Milks, and R. Meuller. 2009. 2008 Snake River fall Chinook salmon redd summary. Bonneville Power Administration.

Bailey, P. 2008. Vascular Plant Survey for Upper Snake River, Walla Walla District, Washington. Environmental Laboratory, U.S. Army Engineer Research and Development Center. Vicksburg, MS.

Barrows, MG, PM Sankovich, DR Anglin, JM Hudson, RC Koch, JJ Skalicky, DA Willis, and BP Silver. 2015. Use of the mainstem Columbia and Snake Rivers by migratory bull trout. Draft Report, US Fish and Wildlife Service, Vancouver, Washington.

Bennett, D. H., L. K. Dunsmoor, J. A. Chandler, and M. Spayde. 1983. Habitat and Benthic and Fish Communities at Schultz Bar and Beckwith Bar, Little Goose Reservoir, Washington. Report of the University of Idaho Department of Fish and Wildlife resources to the U.S. Army Corps of Engineers, Walla Walla, Washington.

Bennett, D. H., M. H. Karr, and M. A. Madsen. 1997. Thermal and velocity characteristics in the lower Snake River reservoirs, Washington, as a result of releases of regulated upstream water. Completion Report to U.S. Army Corps of Engineers, Walla Walla, Washington.

Bjornn, T.C., M.L. Keefer, C.A. Peery, K.R. Tolotti, and R.R. Ringe. 2000. Adult spring and summer Chinook salmon passage through fishways and transition pools at Bonneville, McNary, Ice Harbor, and Lower Granite dams in 1996. Technical Report 2000-3 of the Idaho Cooperative Fish and Wildlife Research Unit to the US Army Corps of Engineers and Bonneville Power Administration, Portland, Oregon.

Blenden, M. L., R. S. Osborne, and P. A. Kucera. 1996. Spring outmigration of wild and hatchery chinook salmon and steelhead trout smolts from the Imnaha River, Oregon, February 6 - June 20, 1995.Annual project report to the Bonneville

Power Administration. Nez Perce Tribe Department of Fisheries Resources Management, Lapwai, Idaho. 74 pp. (pp. 14-15).

Brannon, E. L. 1972. Mechanisms controlling migration of sockeye salmon fry. Ph.D. Thesis, Univ. Washington, Seattle, WA, 156 p.

Brown, R.S., W.A. Hubert, and S.F. Daly. 2011. A primer on winter, ice, and fish: What Fisheries Biologists Should Know About Winter Ice Processes and Stream Dwelling Fish. Fisheries 36 (1): 8-26.

Burgner, R.L. 1991. The life history of sockeye salmon (*Oncorhynchus nerka*). *In* C. Groot and L. Margolis (eds.), Life history of Pacific salmon, p. 3-117. Univ. B.C. Press, Vancouver, B.C.

Chapman, D., A. Giorgi, T. Hillman, D. Deppert, M. Erho, S. Hays, C. Peven, B. Suzumoto, and R. Klinge. 1994. Status of summer/fall Chinook salmon in the mid-Columbia region. Report for Chelan, Douglas, and Grant County PUDs.

Connor, W.P., H.L Burge, R. Waite, and T.C Bjornn. 2002. Juvenile life history of wild fall Chinook salmon in the Snake and Clearwater Rivers. North American Journal of Fisheries Management 19:520-529.

Connor, W.P., C.E. Piston, and A.P. Garcia. 2003a. Temperature during incubation as one factor affecting the distribution of Snake River fall Chinook salmon spawning areas. Transactions of the American Fisheries Society. 132:1236-1243.

Connor, W.P., R.K. Steinhorst, and H.L. Burge. 2003b. Migrational behavior and seaward movement of wild subyearling fall Chinook salmon in the Snake River. North American Journal of Fisheries Management. 23:414-430.

Connor, W.P., J.G. Sneva, K.F. Tiffan, R.K. Steinhorst, and D. Ross. 2005. Two alternative juvenile life history types for fall Chinook salmon in the Snake River Basin. American Fisheries Society. 134: 291-304.

Curet, T.D. 1994. Habitat use, food habits and the influence of predation on subyearling chinook salmon in Lower Granite and Little Goose pools, Washington. Master's thesis. University of Idaho, Moscow.

Dauble., D. D., R. L. Johnson, R. P. Mueller, and C. S. Abernethy. 1995. Spawning of fall Chinook salmon downstream of lower Snake River hydroelectric. projects 1994. Prepared for U.S. Army Corps of Engineers. Walla Walla District, Walla Walla. Washington by Pacific Northwest Laboratory. Richland. Washington.

Dauble, D.D., R.L. Johnson, R.P. Mueller, C.S. Abernathy, B.J. Evans, and D.R. Geist. 1994. *Identification of fall chinook salmon spawning sites near lower Snake River hydroelectric projects.* Report to the U.S. Army Corps of Engineers, Walla

Walla District by Pacific Northwest Laboratory. Walla Walla: U.S. Army Corps of Engineers.

FPC (Fish Passage Center). 2012. Fish passage center smolt data, current and historical. Portland, Oregon. Available at: http://www.fpc.org

FPC (Fish Passage Center). 2015. Bull trout at Smolt Monitoring Program sites, 1998-2015. Fish Passage Center. Portland, Oregon.

Good, T. P., R. S. Waples, P. Adams. (eds.) 2005. Updated status of Federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. of Commerce, NOAA Tech. Memo., NMFS-NWFSC-66, 598 p.

Gottfried, P. K., D. P. Gillette, and N. R. E. Nichols. 2011. Synthesis reports on use of shallowwater dredge spoil on habitat availability and use by salmonids and other aquatic organisms in Lower Granite Reservoirs, WA. 1983-2010. Report of Natural Systems Analysts to the US Army Corps of Engineers, Walla Walla, Washington, under Contract W912EF-11-P-5008.

Gustafson, R.G., Wainwright, T.C., Winans, G.A., Waknitz, F.W., Parker, L.T., and Waples, R.S. 1997. Status review of sockeye salmon from Washington and Oregon. NOAA Tech. Mem. NMFSNWFSC- 33.

Healey, M. C. 1987. The adaptive significance of age and size at maturity in female sockeye salmon (*Oncorhynchus nerka*). Can. Spec. Publ. Fish. Aquat. Sci. 96:110-117.

Healey, M.C. 1986. Optimum size and age at maturity in Pacific salmon and effects of size- selective fisheries. Can. Spec. Publ. Fish. Aquat. Sci. 89:39-52.

Healey, M.C. 1991. The life history of Chinook salmon (*Oncorhynchus tshawytscha*). *In* C. Groot and L. Margolis (eds.), Life history of Pacific salmon, p. 311-393. Univ. B.C. Press, Vancouver, B.C.

Henjum, M. G., J. R. Karl D. L. Bottom, D. A. Perry, J. C. Bednarz, S.G. Wright, S. A. Beckwitt, and E. Beckwitt, 1994. Interim protection for late-successional forests, fisheries, and watersheds, national forests east of the Cascade Crest, Oregon and Washington. Eastside Forests Scientific Society Panel. The Wildlife Society Technical Review 94-2, Bethesda, Maryland.

ICBTRT (Interior Columbia Basin Technical Recovery Team). 2003. Independent populations of Chinook, steelhead, and sockeye for listed evolutionarily significant units within the Interior Columbia River Domain: working draft, July 2003. NOAA National Marine Fisheries Service, Northwest Fisheries Science Center. Seattle, Washington. Available at: http://researach.nwfsc.noaa.gov/trt/col_docs/IndependentPopChinSteelSock.pdf

IDFG (Idaho Department of Fish and Game). 2005. Idaho Comprehensive Wildlife Strategy. Appendix F: Species Accounts and Distribution Maps for Idaho Species of Greatest Conservation Need. Available at: https://fishandgame

Manzer, J. I., and I. Miki. 1985. Fecundity and egg retention of some sockeye salmon (*Oncorhynchus nerka*) stocks in British Columbia. Can. J. Fish. Aquat. Sci. 43:16431655.

Mitchell Duane, 2015, Biological Assessment for Hells Gate State Park Marina. US Army Corps of Engineers, Walla Walla, Washington. 84p.

Mueller, R.P. 2009. Survey of Fall Chinook Salmon Spawning Downstream of Lower Snake River Hydroelectric Projects, 2009. Report to the U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington, by Battelle Pacific Northwest Division, PNWD-4056.

Mueller, R.P. and Coleman. 2007. Survey of Fall Chinook Salmon Spawning Areas Downstream of Lower Snake River Hydroelectric Projects, 2006. Report to the U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington.

Mueller, R.P. and Coleman. 2008. Survey of Fall Chinook Salmon Spawning Downstream of Lower Snake River Hydroelectric Projects, 2007. Report to the U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington, by Battelle Pacific Northwest Division, PNWD-3922

NMFS (National Marine Fisheries Service). 2008. Endangered Species Act Section 7(a) (2) Consultation Biological Opinion And Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on 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.

NMFS (National Marine Fisheries Service). 2010. Supplemental Consultation on Remand for Operation of the Federal Columbia River Power System (FCRPS), 11 Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10(a)(1)(A) Permit for Juvenile Fish Transportation Program. Portland, Oregon. Available at: https://pcts.nmfs.noaa.gov/pls/pcts-pub/biop_results_detail?reg_inclause_in=('NWR')&idin=124302

NMFS (National Marine Fisheries Service). 2014. Endangered Species Act Section 7(a) (2) Supplemental Biological Opinion. Consultation on Remand for Operation of the Federal Columbia River Power System. 17 July 2014. Portland, Oregon

Prentice, E.F., T.A Flagg, and C.S. McCutcheon. 1990. PIT-tag monitoring systems for hydroelectric dams and fish hatcheries. American Fisheries Society Symposium 7:232334.

Raleigh, R. F. 1967. Genetic control in the lakeward migrations of sockeye salmon (*Oncorhynchus nerka*) fry. J. Fish. Res. Board Can. 24:2613-2622.

Rhodes, J.J., D.A. McCullough, and F.A. Espinosa Jr. 1994. A coarse screening process for potential application in ESA consultations. Columbia River Inter-Tribal Fish Commission, Technical Report 94-4, Portland, Oregon. 126 pp.

Ricker, W.E. 1972. Hereditary and environmental factors affecting certain salmonid populations. *In* R. C. Simon and P. A. Larkin (eds.), The Stock Concept in Pacific Salmon. MacMillan Lectures in Fisheries, p. 27-160. Univ. B.C., Vancouver, B.C.

Spence, B.C., G.A. Lomnicky, R.M. Hughes, and R.P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. TR-4501-96-6057. ManTech Environmental Research Services Corporation, Corvallis, Oregon. Available at: http://www.westcoast.fisheries.noaa.gov/publications/reference_documents/the_mantech_report.html

Taylor, D. 2000. Status of the yellow-billed cuckoo in Idaho. In: Western Birds 31:252-254.

Taylor, E.B. 1991. A review of local adaptation in Salmonidae, with particular reference to Pacific and Atlantic Salmon. Aquaculture 98:185-207.

Tiffan, K. F. and Connor. W. P. 2012. Seasonal use of shallow water habitat in the lower Snake River reservoirs by juvenile fall Chinook salmon; 2010-2011 Final Report of Research.
U.S. Geological Survey, Cook, WA and U.S. Fish and Wildlife Service, Ahsahka, Idaho.

Tiffan , K. F. and Hatten, J. R. 2012. Estimates of subyearling fall Chinook salmon rearing habitat in Lower Granite reservoir. Draft Report of Research. U.S. Geological Survey, Cook, WA.

USACE (U.S. Army Corps of Engineers). 1974. Design Memorandum No. 28 – Lower Granite Master Plan, Lower Granite Lake.

USFWS (U.S. Fish and Wildlife Service). 2008. Species assessment and listing priority assignment form: *Coccyzus americanus*.

Waples, R.S., J. Robert, P. Jones, B.R. Beckman, and G.A. Swan. 1991. Status review for Snake River fall chinook salmon. NOAA Tech. Memo. NMFS F/NWC-201, 73 p. (Natl. Mar. Fish. Serv., Northwest Fisheries Science Center, Coastal Zone and Estuarine Studies Division, 2725 Montlake Blvd. E., Seattle, WA 98112-2097.)

Wissmar, R. C., J. E. Smith, B. A. McIntosh, H. W. Li, G. H. Reeves, and J. R. Sedell. 1994. A history of resource use and disturbance in riverine basins of eastern Washington and Oregon. Northwest Science 69:1-35

Wydoski, R. and R. Whitney. 2003. Inland Fishes of Washington. Second Edition. American Fisheries Society, Bethesda, MD in association with University of Washington Press, Seattle. 322 pp.

APPENDIX C

CLEAN WATER ACT SECTION 404(B)(1) EVALUATION

US Army Corps of Engineers ®
Walla Walla District
BUILDING STRONG®

SWALLOWS BEACH RESTORATION

Lower Granite Lock and Dam
Clarkston, Washington

Clean Water Act Section 404(b)(1) Evaluation

ADMINISTRATIVE RECORD – DO NOT DESTROY

PROJECT FILE NUMBER: PM-EC-2016-0007

November 2016

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CLEAN WATER ACT SECTION 404 (b) (1) EVALUATION
(40 CFR 230 - Dated 24 December 1980)

SECTION 1. PROJECT DESCRIPTION.

A. Location

The proposed Swallows Beach Restoration Project (Project) is located at Swallows Park in Asotin County, Washington on the west shore of the Snake River at River Mile 141.7, in SE ¼ of the NE ¼ of Section 33 of T11N R46E, Williamette Meridian. Swallows Park is part of the Lower Granite Lock and Dam Project. See Figures 1, 2, and 3 for Project location.

Figure 1: Lower Granite Lock and Dam and Swallows Park in Clarkston, Washington.

Figure 2. Swallows Park Location in Clarkston, Washington.

Figure 3. Swallows Beach Location in Swallows Park.

B. General Description

The Swallows Park recreation site was created by the Corps in the mid-1970's when the Lower Granite Lock and Dam Project was completed. A channel was dredged to create a beach with the materials placed offshore creating the existing island. Since that time, ongoing sediment deposition has filled the channel, reducing the depth of the former swimming area to as little as 12 inches as measured by a Park Ranger in July 2016. The shallow water depth has attracted birds, particularly Canada geese (*Branta canadensis*), which has resulted in elevated levels of coliform bacteria creating a public health hazard. Consequently, the Corps has officially posted the area as being closed for public swimming since about 2000.

The U.S. Army Corps of Engineers, Walla Walla District, (Corps) proposes to create a new beach access and fill in the existing pool at Swallows Park on the Snake River in Clarkston, Washington. (See Figure 4). The existing beach is no longer usable by the public for water access due to shallow water and high levels of coliform bacteria making it unsafe. The Corps proposes to fill in the existing pool to remove the public safety hazard and create a new beach access on the downstream end of the existing offshore island to create safe water access.

Figure 4. Proposed Action at Swallows Park. (Yellow area is the proposed new beach access and green area is the proposed fill area to be restored to native vegetation)

C. Purpose

The purpose of the proposed action is to restore safe beach access and address public health/safety concerns on Corps managed federal lands at Swallows Park in Clarkston, Washington. Since the mid-1970s when the existing site was created, ongoing sedimentation has reduced the pool depth from over nine feet to approximately one foot during the summer recreation season. Increasing use of the now shallow pool by Canada geese has resulted in unsafe conditions for the public due to high coliform bacteria levels. The existing beach access has not been usable by the public for water based recreation since approximately 2000 due to the shallow water conditions and the hazards to public health and safety.

D. General Description of Dredged or Fill Material

(1) General Characteristic of Material.

The general native soil series at the Project location is Ewall loamy fine sand, 2 to 10 percent slopes (Map Unit Symbol 27 in Figure 5). This information was obtained from the Asotin County Area, Washington (Asotin and Garfield Counties) Soil Survey produced September 14, 2015 (NRCS 2015), with a Custom Soil Resource Report developed for the Project on September 22, 2016.

The Ewall loamy fine sand is situated on river terraces and is comprised primarily of fluvial deposits mixed with sandy eolian materials. Soil texture is loamy fine sandy in the surface 13 inches and sand below that. This soil is excessively drained and has a high to very high saturated conductivity (5.95 to 19.98 inches/hour). This soil series is not listed on the Hydric soil list. The taxonomic classification is a mixed, mesic Typic Xeropsamments.

Water (Map Unit Symbol 121 in figure 5) is exposed during portions of the year when the water level of the Snake River is low, either from operational changes at Lower Granite Lock and Dam, or during periods of low river flows. The typical operational pool level for Lower Granite Lake ranges from 733 feet elevation at minimum operating pool (MOP) to 738 feet elevation at the ordinary high water mark (OHWM). Operational changes since March 2015 have resulted in the pool level fully being lowered to MOP, which hasn't occurred for many years due to navigational needs. Observed soil conditions within the Water map unit when pool levels are low are essentially the same as for the Ewall loamy fine sand soil series.

A variety of materials would be used for the proposed new beach and filling of the existing shallow pool. Sand textured material would be used for creation of the new beach access, while a variety of materials may be used for the filling of the existing pond, possibly ranging from coarser materials to create a stable base, to finer textured materials (loam and silt textures) to create a planting substrate for the proposed native grasses and other plants.

Figure 5. Soil Map of Project Area. (Map Unit 27 is Ewall loamy fine sand, 2 to 10 percent slopes, Map Unit 121 is Water)

(2) Quantity of Material

Construction of the new beach is estimated to require up to 6180 cubic yard of sand and the filling of the existing shallow pool is estimated to require up to 21,280 cubic yards of assorted materials (Figure 6). These amounts are approximate and actual amounts used would likely be less since the calculations in Figure 6 assumed a pool depth up to 14 feet. A survey conducted by a Corps Park Ranger in July 2016 measured a maximum pool depth of 12 inches at MOP. Adding six feet of fill to the MOP elevation (733 foot) to fill the pool above the OHWM (738 foot elevation) would result in a maximum fill depth of approximately seven to eight feet. All fill material would be placed during low water periods.

(3) Source of Material

All fill materials would be purchased from local sources and would be tested in compliance with all appropriate laws and regulations.

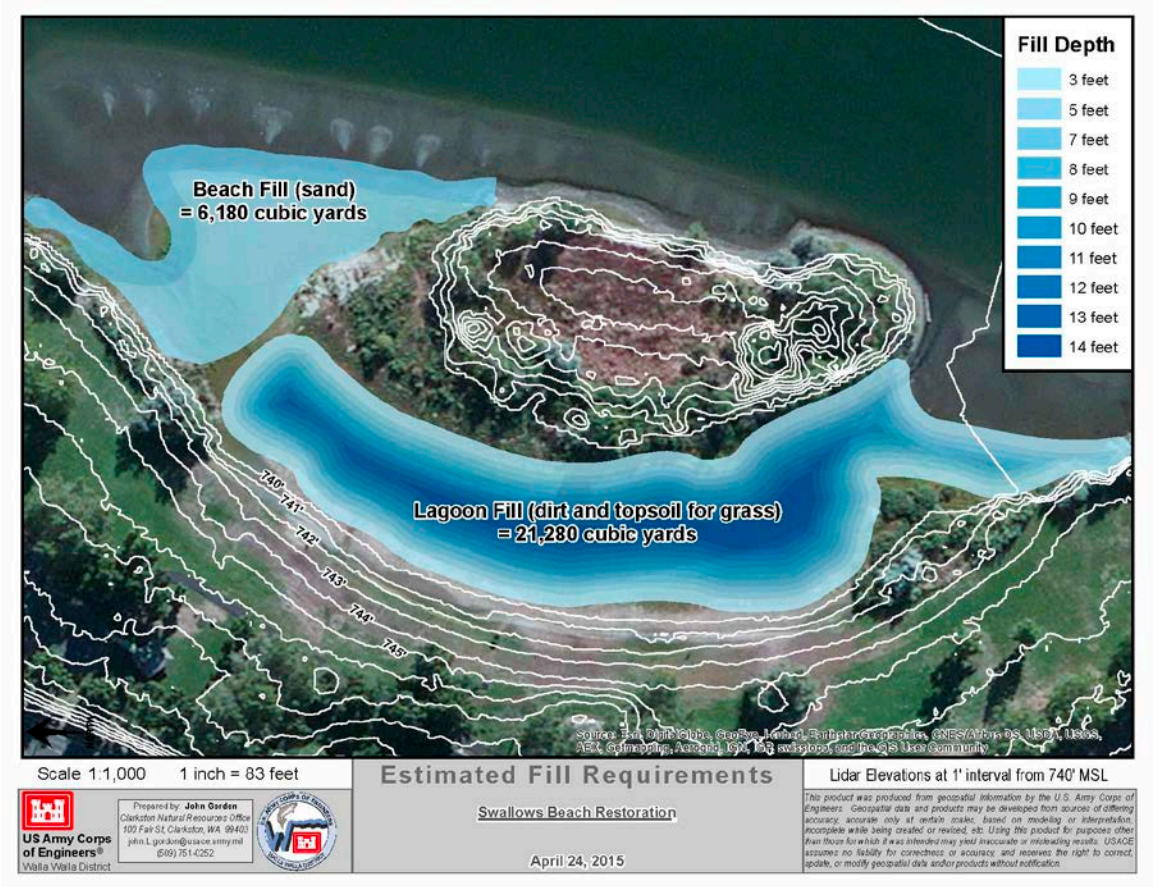

Figure 6. Estimated Fill Requirements for Swallows Beach Project.

E. Description of the Proposed Discharge Site

(1) Location

Materials would be placed at the locations identified in Figure 4 and 6. The proposed beach location is at the downstream end of the existing offshore island where sediment has been accumulating from downstream current eddies for many years. The pool to be filled is located in the originally constructed channel (constructed in approximately 1976) for the beach.

(2) Size

a. Proposed beach area. The beach would be up to 235 feet long and up to 150 feet wide for an area of approximately 21,750 square feet, or just under one half acre.

b. Proposed filled pool. The pool filled area would range from approximately 540 to 850 feet long and would range from approximately 85 to 150 feet wide for an area of approximately 88, 750 square feet, or just over two acres.

(3) Type of Site

Both sites are below the ordinary high water mark on the edge of the Snake River in Swallows Park an area with a land classification as high density recreation. The park was developed in the mid 1970's to provide recreational

facilities and opportunities to resident of Clarkston, Washington, Lewiston, Idaho, and surrounding communities.

a. Proposed beach area. This area currently is submerged portions of the year, with water levels fluctuating between elevation 733 feet and elevation 738 feet, primarily due to conditions related to the operational pool level behind Lower Granite Lock and Dam. At low pool levels approaching MOP, much of the area (0.43 acres) is a wetland, meeting the hydric soil, vegetation, and hydrology requirements based on the 1987 Corps Wetlands Delineation Manual.
b. Proposed filled pool. This area currently is submerged portions of the year, with water levels fluctuating between elevation 733 feet and elevation 738 feet, primarily due to conditions related to the operational pool level behind Lower Granite Lock and Dam. At low pool levels approaching MOP, a variety of sites are present including wetlands (0.51 acres), the shallow pool (0.46 acres), and unvegetated shoreline mudflats (0.45).

(4) Type of Habitat

The aquatic communities present were previously described in (3) above indicating the presence of wetlands, the shallow pond, and the unvegetated shoreline mudflats. The extent of these habitats varies throughout the year depending on the level of the pool behind Lower Granite Lock and Dam.

During a typical year the reservoir is near the high pool level, near OHWM, from approximately October 1 through April 1 and then is at low pool level, near MOP, from approximately April 1 until October 1. Figure 7 shows the levels of the Lower Granite forebay during 2015. Fluctuations can occur in any year, but the pool level can fluctuate up to five feet between OHWM and MOP. Since March 2015, wetland vegetation and associated soils have become established in some areas that previously were submerged year round.

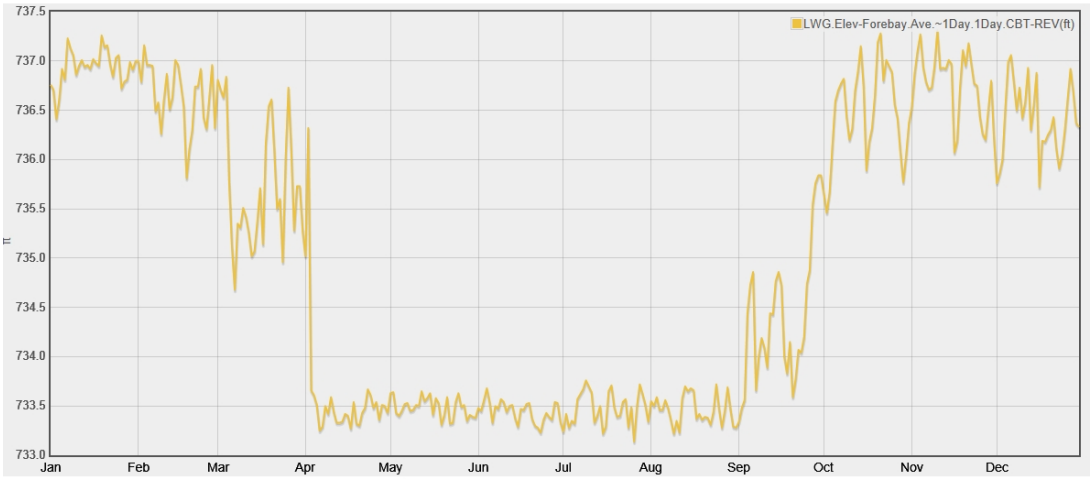

Figure 7. Lower Granite 2016 Forebay Levels.

(5) Timing and Duration of Work

All work would occur when the reservoir is at low pool. The new beach creation would include limited in water work, while the pool filling, by the nature of the work, would include in-water work at the lowest levels. The proposed actions would start April 2017 and be completed as resources and materials become available. The two proposed actions may be implemented separately since they are not dependent on each other. The new beach creation would be completed in one operating season during low pool levels (generally between April 1 and October 1), while the pool filling action would occur during the same seasonal periods, but would likely require several years to complete..

F. Description of Method for Placement of Materials

Sand for the beach and other fill materials for the pool filling proposal would be transported to the area with heavy equipment. Materials may be dumped directly on the areas of proposed actions, or stored in staging areas above OHWM, if needed. Excavators and/or backhoes would be used for placement of materials into Project locations. Dozers and/or road graders would be used for spreading materials into desired locations.

G. Alternatives Considered

Numerous alternatives were considered to meet the Project purpose to restore safe beach access and public health/safety concerns associated with recreation opportunities on Corps managed federal lands at Swallows Park in Clarkston, Washington. These are discussed in more detail in the Swallows Beach Restoration Environmental Assessment, but brief descriptions of each alternative including the identification of the least environmentally damaging, practicable alternative (LEDPA) are:

(a) Alternative 1 (No Action Alternative): No restoration actions would occur. The existing shallow pool would remain. This alternative would not meet the Project purpose to restore safe beach access and public health/safety concerns associated with recreation opportunities.

(b) Alternative 2 (Dredge Alternative): This alternative would remove accumulated sediment from the shallow pool and restore the original design specifications to the beach access area for safe public use. Alternative 2 was not carried forward because it is estimated that ongoing maintenance dredging would need to be conducted every three to five years to retain sufficient pool depth for public use. The Project does not have sufficient resources to conduct this maintenance dredging on an ongoing basis, so this is not a practicable alternative.

(c) Alternative 3 (New Beach Alternative): This alternative would create a new beach access area for safe public use on the downstream end of the off shore island. This would partially meet the Project purpose by creating a safe public beach access, but the existing public health and safety concerns associated with the existing shallow pool would remain, so this alternative was not carried forward. High fecal coliform bacteria levels would still exist and shallow water hazards (mudflats for children) would remain.

(d) Alternative 4 (Pool Filling Alternative): This alternative would fill the existing shallow pool to remove the public health and safety concerns associated with the pool, but would not address the Project purpose to create a safe public beach access. Consequently, this alternative was not carried forward for further consideration.

(e) Alternative 5 (Combined-Preferred Alternative): The proposed action would create a new beach access area for safe public use on the downstream end of the existing off shore island and would fill the existing shallow pool to remove the public health and safety concerns associated with the pool. This alternative has been carried forward as the LEDPA, and also as the preferred alternative that best meets the Project Purpose and Need.

SECTION 2. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

(1) Substrate Elevation and Slope

The slope within most of the Project area are generally less than 2 percent, although there are small areas with slopes slightly higher. All proposed actions would occur between the ordinary high water mark elevation of 738 feet and the minimum operating pool level of 733 feet. The reservoir is generally drawn down to an elevation near MOP from April 1 to October 1 each year.

(2) Sediment Type

The substrate consists primarily of Ewall loamy fine sand, 2 to 10 percent slopes as indicated in Section 1. D. (1). The Ewall loamy fine sandy, present at the proposed Project location, is excessively well drained fluvial deposits mixed with sandy eolian materials.

A variety of materials would be used for the proposed new beach and filling of the existing shallow pool. Sand textured material would be used for creation of the new beach access, while a variety of materials may be used for the filling of the existing pond, possibly ranging from coarser materials to create a stable base, to finer textured materials (loam and silt textures) to create a planting substrate for the proposed native grasses and other plants. All materials would be obtained from local sources and would be sampled to ensure no weeds or hazardous materials were present.

(3) Fill Material Movement

Incidental amounts of sand may move into the Snake River during the construction of the new beach, but this would be similar to existing material present in the river. Material used to fill the existing shallow pool would be deposited during the low water period and only incidental amounts would be likely to reach the Snake River as measures would be taken to minimize sediment movement. The introduced sand and fill materials are not expected to move a noticeable amount after placement.

(4) Physical Effects on Benthos

Much of the Project area is above the water level for significant periods of time (April 1-October 1) every year as part of routine reservoir operations. Some recolonization of the banks probably occurs seasonally under current conditions, and would be expected to continue to the same extent after the project is completed.

(5) Other Effects

There are no other effects anticipated due to the proposed action.

(6) Actions Taken to Minimize Impacts

The work would be completed when the pool elevation has been lowered to an annual minimum as a result of releases for hydropower and downstream fish passage and allowed to dry out to the maximum extent possible. Work would be completed between April 1 and October 1 each year. Silt fencing may be used at both the beach site and the fill site to minimize turbidity. Action would be taken at the pool fill site to ensure that any fish are removed prior to the proposed action. The first few times it rains on the fresh beach sand expect increases in localized turbidity.

B. Water Circulation, Fluctuation, and Salinity Determinations

(1) Water

(a) Salinity – Not applicable

(b) Water Chemistry - No change expected

(c) Clarity – A slight increase in near-shore turbidity could occur during blading and leveling if sand slides towards the water at the new beach site. Any increase in turbidity from this activity would be short-lived and localized. Increases in turbidity could occur in the pool during filling actions, but these increases would be localized and are not expected to reach the Snake River. The first few times it rains on the fresh beach sand expect increases in localized turbidity.

(d) Color - No effect

(e) Odor - There would be an improvement in odor when the shallow pool is filled. Currently the pool is stagnant in the summer season with an offensive smell.

(f) Taste – No effect

(g) Dissolved Gas Levels – No effect

(h) Nutrients – The proposed action would not have a detectable effect on the nutrient content of the reservoir.

(i) Eutrophication - No effect

(j) Others - No effect

(2) Current Patterns and Circulation

(a) Current Pattern and Flow – Filling the shallow pool would close off water flow, eliminating the seasonal channel that currently exists during high pool levels. The creation of the new beach would eliminate the current shallow water flow in that location.

(b) Velocity – Water would no longer flow through the channel created in the 1970's. Snake River velocity would be unaffected.

(c) Stratification – No effect

(d) Hydrologic Regime – No effect. The hydrologic regime of the Snake River is effected by seasonal runoff patterns and operational pool level changes at Lower Granite Lock and Dam.

(3) Normal Water Fluctuations – No effect. Water fluctuations are primarily impacted by seasonal alterations at lower Granite Dam for releases for hydropower and downstream fish passage.

(4) Actions That Will Be Taken to Minimize Impacts – Proposed actions would be conducted during low water levels (MOP).

C. Suspended Particulate/Turbidity Determinations

(1) Expected changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Site

Slight increases in turbidity could be expected to last for short periods during blading and placement of sand at the beach site and fill materials in the pool. However, no long-term detrimental effects from suspended particulates or turbidity would be expected.

(2) Effects (Degree and Duration) on Chemical and Physical Properties of the Water Column

(a) Light Penetration – Near-shore light penetration could be reduced at the beach site for short periods of time if sand slides down the bank during grading. However, this reduction would not be expected to exceed the light inhibition that routinely occurs as a result of wave action. Short-term light penetration in the pool fill site would be reduced as fill material was added.

(b) Dissolved Oxygen – No effect.

(c) Toxic Metals and Organics – No contaminants are expected to be present in the existing locations or the sand and fill materials originating from a clean sources. All materials would be sampled prior to placement.

(d) Pathogens – There are no known sources of anthropogenic sources of pathogens at Swallows Beach or fill source sites.

(e) Aesthetics –Some possible short lived turbidity near-shore could occur in the Snake River as sand is placed at the new beach location. This turbidity is not expected to be significantly different from the turbidity caused by boat wakes in adjacent shoreline locations.

Short-term turbidity could occur in the shallow pool during the filling operation. As fill material is added turbidity would increase, but measures would be taken to minimize impacts to the Snake River. When the pool would be filled, aesthetics would be improved thorough the planting of native grasses and other vegetation.

(f) Other - No other effects.

(3) Effects on Biota

(a) Primary Production, Photosynthesis – Much of the proposed beach area is currently a wetland dominated by the invasive plant purple loosestrife (*Lythrum salicaria*) with minor amounts of native sedge (*Carex sp.)* and other species. Small wetland areas are present around the shallow pool, also comprised primarily of purple loosestrife with minor amounts of native sedges.

(b) Suspension/Filter Feeders – Mussels or bivalves would be covered during filling activities, if present. Dace, suckers, and non-native fish, such as carp, would likely leave the pool when action commences.

(c) Sight Feeders – Adequate area exists to allow sight feeders to move out of the work area for feeding purposes. No permanent reductions of fish or other large sight feeders of the Snake River aquatic ecosystem would be anticipated. Any amphibian and reptile communities remaining in the proposed fill areas would be disturbed, buried, or destroyed. This effect would be localized.

(4) Actions Taken to Minimize Impacts – No further actions would be necessary.

D. Contaminant Determinations

The sand fill would consist of clean materials. All potential materials would be sampled for contaminants prior to acceptance.

E. Aquatic Ecosystem and Organism Determinations

(1) Plankton Effect – Any plankton communities remaining in the proposed fill areas would be disturbed, buried, or destroyed. This may be beneficial since the pool being filled is a point source for hazardous bacteria and potential favorable conditions exist for toxic algae production, botulism, and other hazardous diseases (warm, nutrient rich backwater, with migratory waterfowl).

(2) Benthos Effects – Any benthic communities remaining in the proposed fill areas would be disturbed, buried, or destroyed.

(3) Nekton Effects – Mobile aquatic organisms would likely move out of the area if the water-sediment interface is disturbed, but would return when that disturbance has passed.

(4) Aquatic Food Web Effects – No effects.

(5) Special Aquatic Sites Effects (see Figure 8)

Figure 8. Existing Ecosystems at Swallows Beach.

(a) Sanctuaries and Refuges – Not applicable

(b) Wetlands – Approximately 0.43 acres of wetland would be impacted by the construction of the new beach and 0.51 acres would be impacted by the filling of the existing pool. The loss of these areas would be mitigated for in compliance with Executive Order 11990.

(c) Mud Flats – Approximately 0.45 acres of unvegetated mudflats would be impacted when the shallow pool is filled.

(d) Vegetated Shallows – Between OHWM and MOP, there are approximately 0.07 acres of vegetated shallows at the proposed new beach site and up to 0.63acres of vegetated shallows at the pool fill site.

(e) Riffle and Pool Complexes – Not applicable

(6) Threatened and Endangered Species – A review of species listed under the Endangered Species Act (ESA) and their critical habitats was conducted June 22, 2016. ESA-listed species include, Snake River sockeye, spring/summer and fall Chinook, steelhead, bull trout, yellow-billed cuckoo, and Spalding's catchfly. Critical habitat is designated for each of the fish species and proposed for yellow-billed cuckoo.

The Corps concludes that the proposed activity "may affect, but is not likely to adversely affect" ESA listed fish species under the jurisdiction of the National Marine Fisheries Service (Snake River sockeye, spring/summer and fall Chinook, steelhead) or their critical habitat in the project area.

For species under the jurisdiction US Fish and Wildlife Services, the project will have "no effect" on the ESA listed bird, yellow-billed cuckoo, or plant, Spalding's catchfly. The project will have "no effect" on ESA listed bull trout, but "may affect, but is not likely to adversely affect", their critical habitat.

(7) Aquatic Life Forms – The effects of the proposed action are expected to be minimal since the work area is small and there would be little turbidity. Fish would be able to easily avoid the work area.

(8) Land Based Life Forms – The proposed actions would alter wetland vegetation to a dry terrestrial beach at the downstream end of the off shore island and convert wetland vegetation to upland grass/forb habitats in the pool filling location.

(9) Actions Taken to Minimize Impacts – The following Impact Minimization Measures would be implemented:

(a) All work below the OHWM would be conducted during MOP. At MOP there is only approximately one foot of water in the pool. The southern end of the pool has a small one foot wide stream that enters the pool from the Snake River. Given that the in water work area is completely surrounded except for the small stream that is flowing into the pool, any turbidity can reasonably be expected to stay in the pool. If for some reason turbidity did become a problem a silt fence would be erected on the south side of the pool.

(b) Fill would be put into the pool starting at the north end. Given the on-site baseline conditions (i.e. temperatures exceeding lethal fish limits), it is reasonable to assume that any ESA-listed fish would not be present at the time of work. Any other fish in the pool would be able to naturally

move out of the south end and into the main stem of the Snake River the moment fill is dumped into the north end.

The following Best Management Practices would be used as warranted.

(a) Construction equipment would be kept in good repair without fuel, hydraulic or lubricating fluid leaks.
(b) If leaks or drips do occur, they would be cleaned up immediately.
(c) Drip pans would be utilized when vehicles are parked in the park area.
(d) Equipment repairs would be performed off the project site.
(e) The Corps would make every effort to use environmentally safe chemicals and substances.
(f) All equipment would be inspected at a staging area prior to entering or leaving the staging area to prevent the spread of noxious weeds.
(g) Noxious weed populations would be treated in accordance with the Corps Integrated Pest Management Plan.
(h) If straw was used, only certified weed-free straw used for erosion control during construction and restoration activities would be allowed.
(i) Seeding with native seed would be applied to all disturbed ground resulting from the proposed activities.

F. Proposed Disposal Site Determinations

(1) Mixing Zone Determination - See number (2) Compliance with applicable Water Quality Standards and Regulations, below.

(2) Determination of Compliance with Applicable Water Quality Standards and Regulations.

(a) Section 401 certification - Section 401 of the Clean Water Act requires that applicants requesting a Federal license or permit to conduct activities which may result in discharge in the navigable waters of the United States, provide to the licensing or remitting agency, a certification from the State that any such discharge complies with the applicable water quality standards. In this case, the State of Washington certification that the project will not cause a violation of Washington water quality standards is requested from the Department of Ecology

(b) Stream Channel Alteration Permit – Not required in Washington.

(3) Potential Effects on Human Use Characteristics

(a) Municipal and Private Water supply - No effect

(b) Recreational and Commercial Fisheries - The proposed actions would increase recreational use by providing safe beach access at the proposed new beach site and address public health/safety concerns at the existing swallow pool.

(c) Water Related Recreation - Beach access at Swallows Park has been lacking since the approximately 2000 due to shallow water and high levels of coliform bacteria. The proposed actions would address both those concerns resulting in an increase in recreational opportunities for the general public.

(d) Aesthetics – Application of sand at the proposed beach access site and filling of the shallow pool may create minor increases in turbidity near the work area. However, these increases would be short-lived and full implementation of the proposed actions would improve the aesthetics for human uses over the long-term.

(e) Parks, National Historical Monuments, National Seashores, Wilderness Area, Research Sites, and Similar Preserves - Swallows Park is a Corps operated recreation site. Implementation of the proposed actions would provide improvements to the park and increase visitor use.

(f) Actions to Minimize Impacts - No actions are needed are necessary as the proposed actions would be beneficial for human uses.

G. Determination of Cumulative Effects on Aquatic Ecosystems

The proposed actions would alter small aquatic ecosystems to an upland beach access area and a terrestrial grass/forb ecosystem. Mitigation actions would be taken to compensate for these losses and overall project impacts would be beneficial.

H. Determinations of Secondary Effects on the Aquatic Ecosystem

The proposed actions are not expected to have any negative secondary effects on the aquatic ecosystem. Sedimentation along the Project shore would improve potential for palustrine habitats creating a positive long-term effect.