US Army Corps of Engineers
Walla Walla District

MILTON-FREEWATER NURSERY BRIDGE DROP STRUCTURE REHABILITATION

PM-EC-2013-0090

Draft Environmental Assessment

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

18 April 2014

Milton-Freewater
Nursery Bridge Drop Structure Rehabilitation
Environmental Assessment

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1. INTRODUCTION

The U.S. Army Corps of Engineers, Walla Walla District (Corps), proposes to rehabilitate the Nursery Bridge drop structure on the Walla Walla River in Milton-Freewater, Oregon (Figure 1). The structure was damaged by high flows in April 2013.

This Environmental Assessment (EA) was prepared in accordance with the Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA)* (Title 40 of the CFR Parts 1500-1508) and Engineer Regulation (ER) 200-2-2, *Procedures for Implementing NEPA.* The objective of the EA is to determine the magnitude of the environmental effects of the proposed action and any reasonable alternatives. If such effects are relatively minor, a Finding of No Significant Impact (FONSI) would be issued and the Corps would proceed with the preferred alternative. If the environmental effects are significant according to the CEQ's criteria (40 CFR 1508.27), an Environmental Impact Statement (EIS) would be prepared before a decision is reached to implement the preferred alternative. Applicable laws under which these impacts will be evaluated include NEPA, the Endangered Species Act, the Clean Water Act, and the National Historic Preservation Act. The Corps also considered, but determined inapplicable, requirements under the Clean Air Act, the U.S. Fish and Wildlife Coordination Act, the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

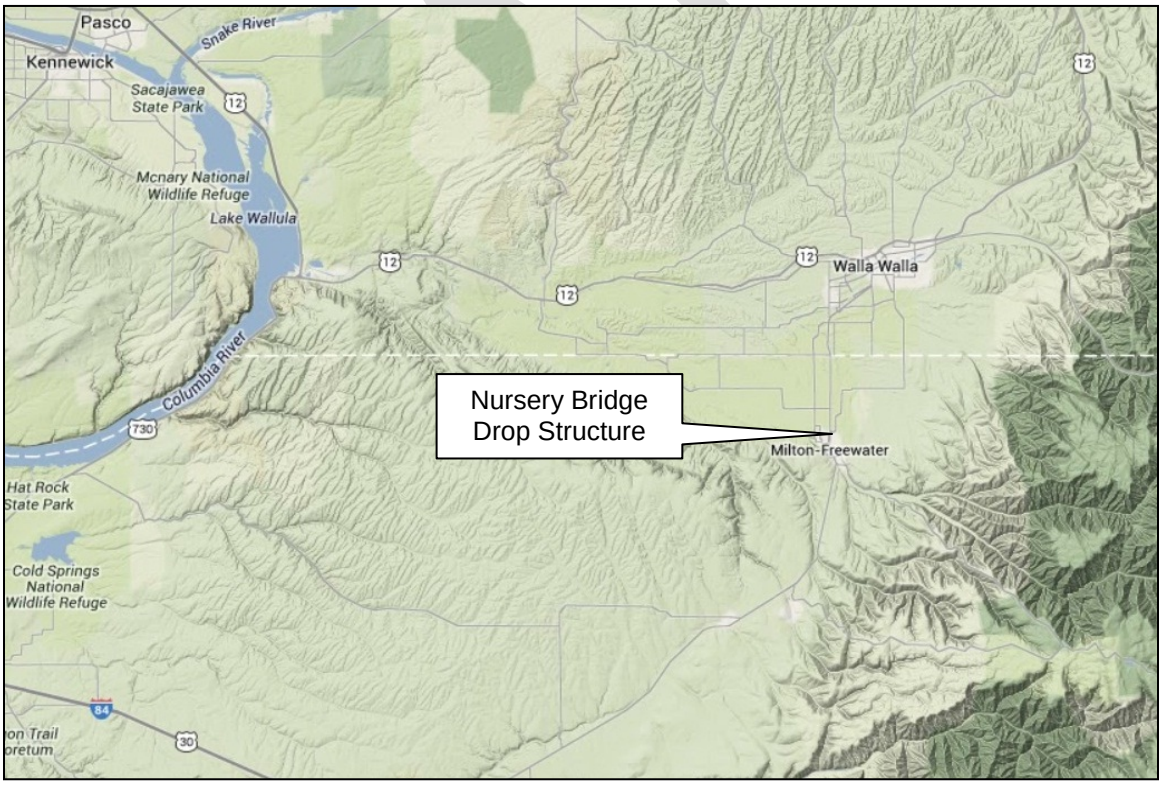

Figure 1. Location of the Nursery Bridge drop structure in Milton Freewater, Oregon.

1.1. Purpose and Need

The purpose of the proposed action is to restore original flood risk reduction capability of the Milton-Freewater Flood Control Project (MFFCP) by repairing damages to the Nursery Bridge drop structure caused by high flows that occurred between April 19 and 21, 2013. The repair work is being proposed pursuant to the Rehabilitation Program under Public Law (P.L.) 84-99. The Nursery Bridge structure is part of the MFFCP, which provides flood risk reduction benefits to the City of Milton-Freewater and surrounding residences and businesses. The Milton-Freewater Water Control District (MFWCD) is the local owner and operator of the MFFCP. The structure also provides erosion protection for the Eastside Road and a railroad bridge and includes a fish ladder that provides migration access to the upper Walla Walla River for salmonid species listed under the Endangered Species Act (ESA) (Figure 2).

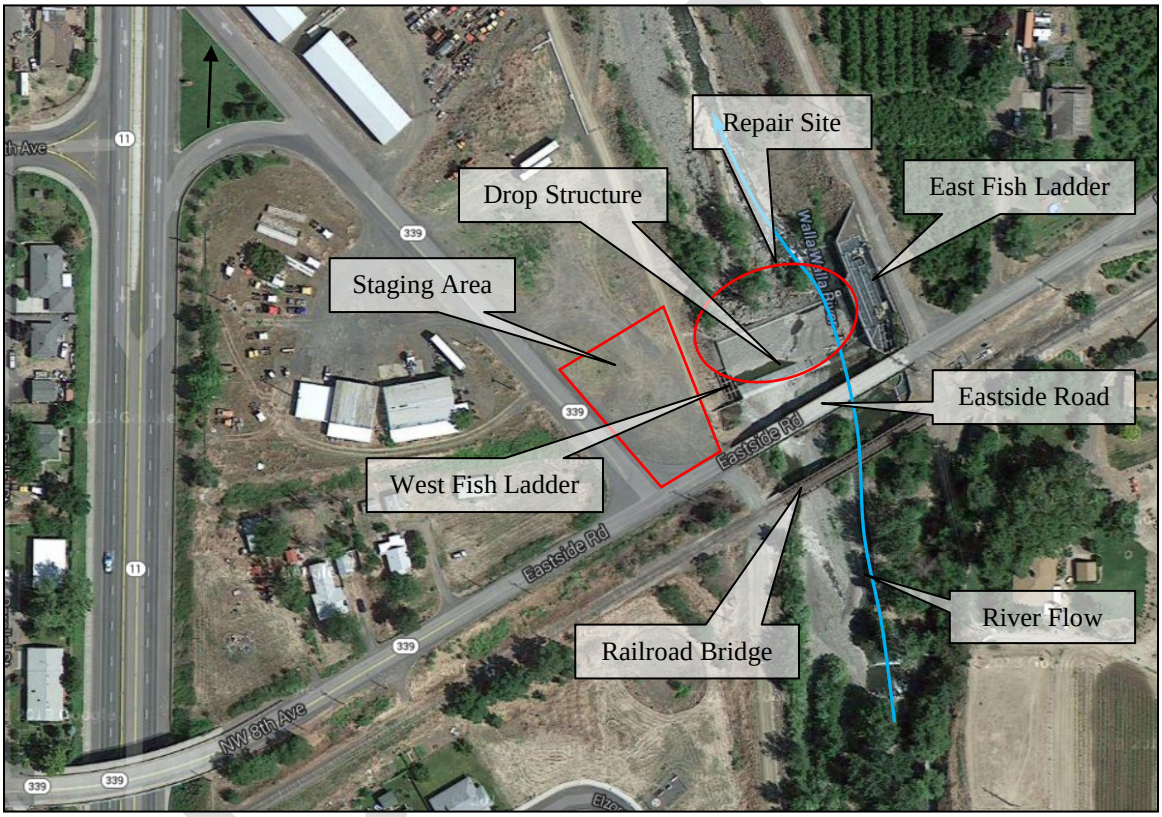

Figure 2. Aerial overview of the Nursery Bridge drop structure and staging area.

Damage to the drop structure includes displaced riprap immediately downstream of the end sill (Figure 3) and eroded concrete at the toe of the spillway (Figure 4). High flows displaced riprap exposing the end sill to a depth of approximately six feet. Flows along the toe of the spillway have exposed rebar and eroded portions of six of its eight sections. There is also damage to the 1:1 concrete slope. Without repair, the drop structure will likely continue to deteriorate and may eventually fail, leading to the loss of the drop structure, eastside bridge, railroad bridge, both fish ladders, and possibly the nearby levee system.

Figure 3. Picture showing the loss of riprap from the toe of the end sill.

Figure 4. Picture showing damage (exposed rebar) at the toe of the drop structure.

1.2. Background Information

The Nursery Bridge drop structure was first constructed in 1952 to arrest degradation that was occurring within the levee system of the Walla Walla River. In 1966 the Corps added a fish ladder for fish passage on the west shore of the drop structure. However, changes in river flows shifted flows from the west shore to the east shore; essentially leaving the fish ladder dry. In 2001, a new fish ladder was constructed on the east shore.

Under Public Law 84-99 authority was given the Corps to provide emergency response/disaster assistance; including rehabilitation of flood control works (FCW) threatened or destroyed by flood. To be eligible levees must be part of the Corps Rehabilitation and Inspection Program (RIP). This program provides for inspections of FCWs and the rehabilitation of damaged FCWs. The Nursery Bridge drop structure is eligible under this authority for emergency assistance from the Corps. On May 21, 2013 the flood control district requested assistance from Corps to repair the drop structure. This proposed project is in response to that request.

1.3. Proposed Action Area

The Nursery Bridge drop structure is located in rural Umatilla County, Oregon, on the Walla Walla River. The repair site is immediately downstream from the intersection of the Walla Walla River and the Eastside Road in Milton-Freewater, Oregon (Figure 2). The drop structure is part of the Milton-Freewater Levee system, which began in 1952 to protect sections of the town of Milton-Freewater. The area surrounding the project site is primarily agriculture with some residential areas to the southwest and industrial use to the northwest.

The Walla Walla River, adjacent to the drop structure, is constrained by the Milton-Freewater levee system. The floodplain is virtually non-existent downstream from the project site but is more functional upstream from the drop structure. The river is dominated by a braided system with an unstable channel that migrates within the levee system. The limited corridor of riparian habitat is important for fish and wildlife in the area and is dominated by cottonwood, willow, Russian olive, dogwood, water birch, and alder. While instream fish habitat is limited by low summer flows and high summer water temperatures, the upper Walla Walla River supports important populations of bull trout, Middle Columbia River steelhead and reintroduced hatchery raised Chinook salmon.

2. ALTERNATIVES

Two alternatives are evaluated in this EA; the No Action alternative and the Drop Structure Rehabilitation or the proposed action alternative. Each alternative includes both repair sites. The “no action” alternative does not satisfy the project’s purpose and need, but NEPA requires analysis of the no action alternative to set the baseline from which to compare other alternatives. “No action” does not mean there would be no environmental effects from this alternative.

Three additional alternatives were considered but dismissed because they were either not viable or are outside the authority of PL 84-99. These included: 1) the restoration of the drop structure to its pre-flood condition without any “resilience” incorporated, 2) the complete restoration of the degraded stream channel downstream from the drop structure, and 3) the improvement, or betterment of the

existing drop structure. The first of these was dismissed because it had already been attempted in 2010 and had sustained extensive damage during runoff events in 2013, prompting this proposed action. The second would include the installation of multiple grade control structures to restore nearly one mile of degraded stream below the drop structure. This alternative went well beyond the authority of PL 84-99. The third alternative would require improvements to the existing drop structure that were considered a betterment that also went beyond the authority of PL 84-99 by installing new sheetpile walls and 7,000 square feet of articulated block matting. Consequently, only the No Action and Proposed Action Alternatives were analyzed further.

2.1. Alternative 1: No action

Under Alternative 1, the no action alternative, the Corps would not repair the Nursery Bridge drop structure, but would allow the structure to continue to function in its damaged state. No ground disturbing activities would take place and no alterations of the drop structure would occur. Periodic monitoring and inspections would take place and annual removal of sediments from the stilling basin would continue. Without repair, the drop structure would likely deteriorate and may eventually fail, leading to the loss of private property and public infrastructure.

2.2. Alternative 2: Proposed Action

The proposed action is divided into two sections; concrete repair at the toe of the spillway, and riprap or erosion protection of end sill. All work would be conducted during the summer in-water work window (July 1 – September 30) to minimize effects to sensitive resources.

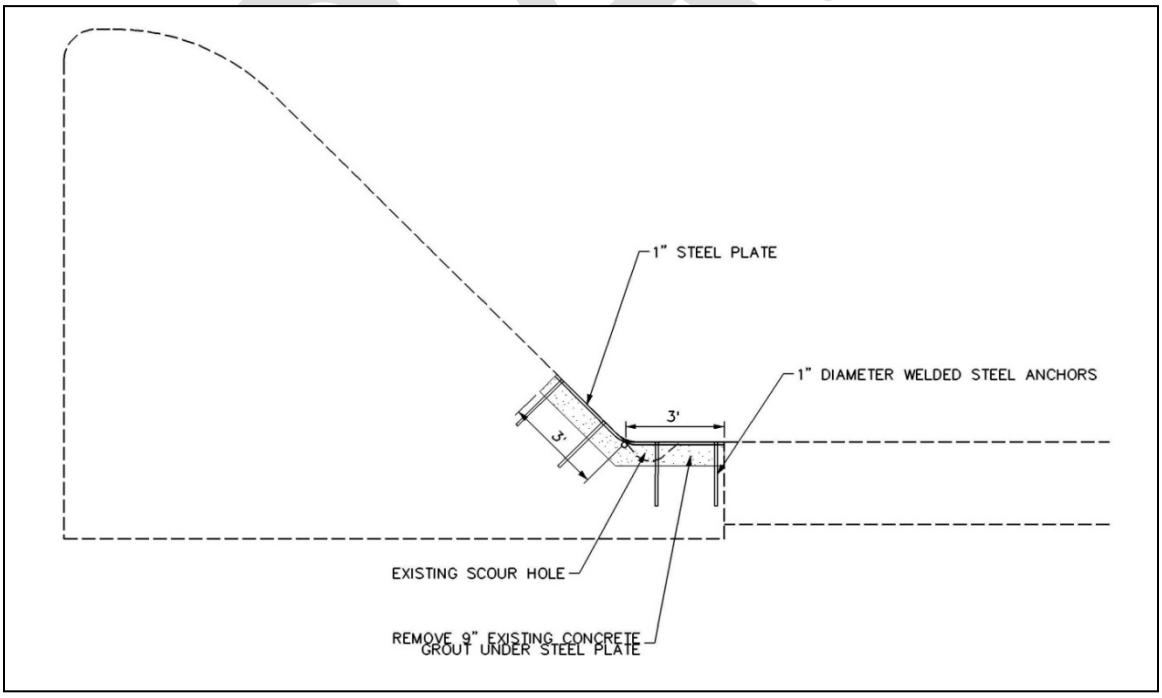

Figure 5. Cross section of the spillway showing proposed concrete repairs at the toe of the structure.

2.2.1. Concrete Repair

The existing concrete at the toe of the spillway has been damaged on six of its eight sections. Continued erosion is likely to occur if the spillway is not repaired. To protect the drop structure, grout would be used to fill the eroded areas of the spillway, while the base of the spillway would be armored with a steel plate to prevent the reoccurring erosion. The steel plate would be anchored to the bottom of the stilling basin using welded steel epoxy adhesive anchors and would protect approximately 3 feet of the base of the structure and 3 feet of the slope. The plate would be recessed flush with the concrete structure and grouted to provide a smooth transition to concreted surfaces (Figure 5).

2.2.2. Riprap Repair

Previous installations of riprap to protect the drop structure have failed. To prevent similar failures a more resilient gabion structure would be installed to stabilize the stream channel immediately downstream from the end sill of the stilling basin. The gabion structure would extend out from the end sill of the drop structure approximately 27 feet and would be constructed in the shape of an extended stilling basin. This structure would be covered with Shotcrete (a sprayed on concrete) to provide a smooth surface, prevent entrapment of fish, and to increase structure stability (Figures 6 and 7).

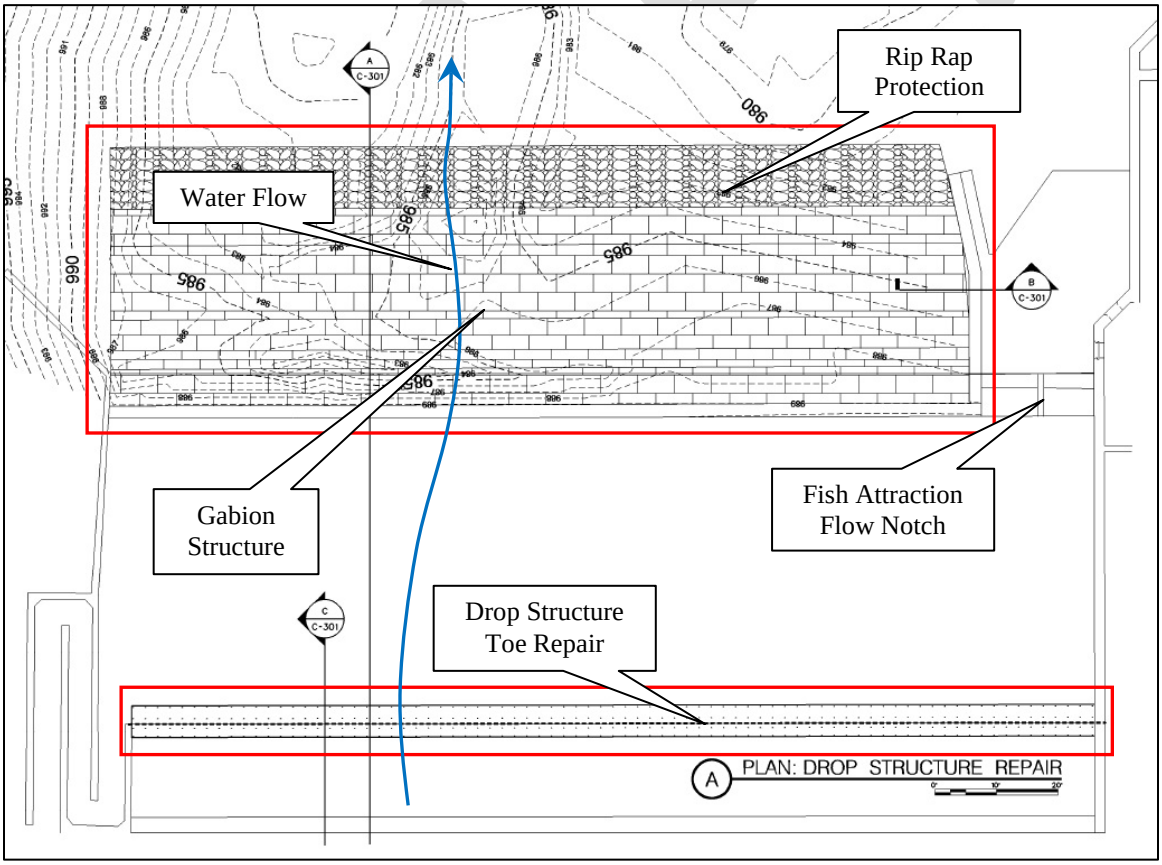

Figure 6. Top view of plans showing the spillway toe repair and installation of the gabion skirt.

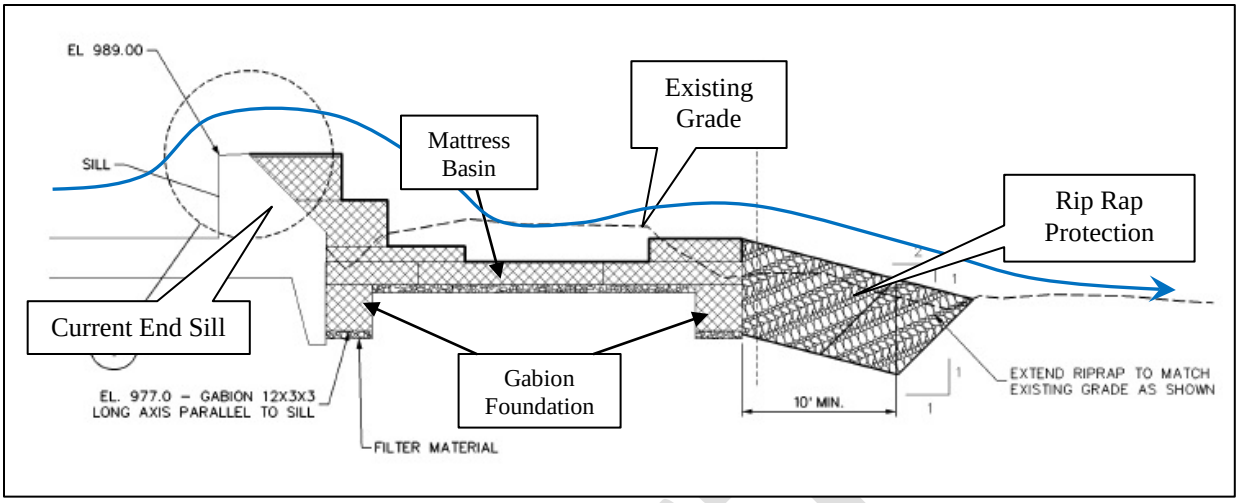

Figure 7. Cross section of the stilling basin showing the installation of the gabion skirt and riprap armoring.

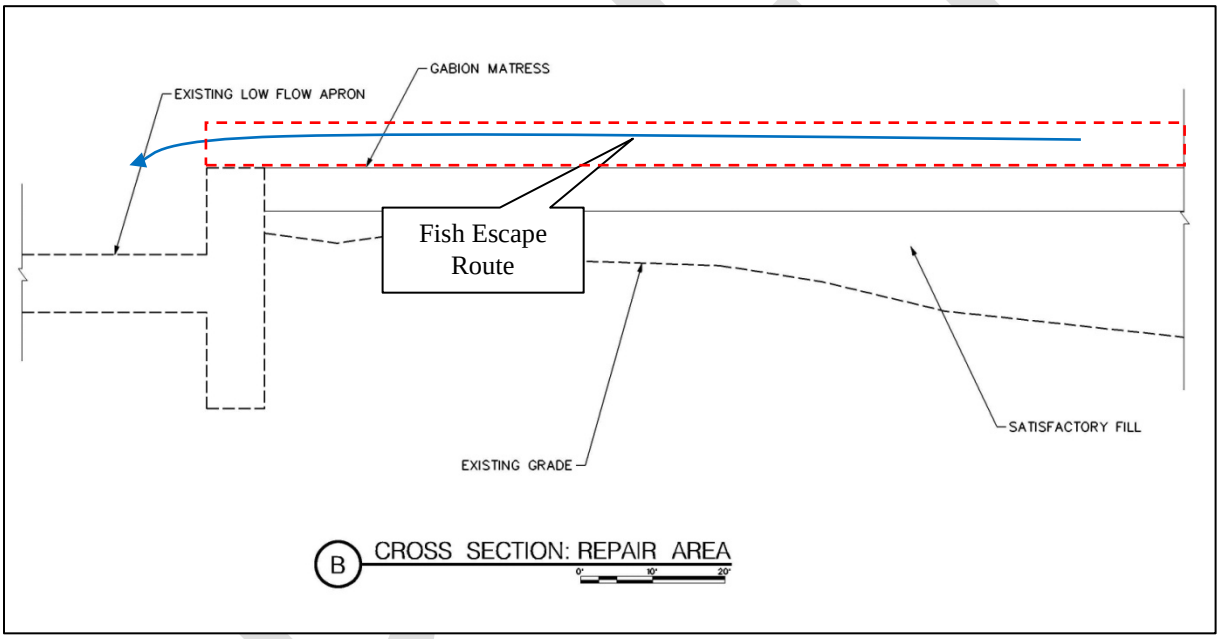

Figure 8. Cross section of the gabion skirt showing the relationship between the repair and the low flow fish passage slot.

The area below the stilling basin would be leveled and compacted for placement of the gabion baskets. Two rows of three foot by three foot gabion baskets would form the up- and down-stream foundation upon which the remaining gabion structure would be constructed. This would include a mattress of gabion baskets 1.5 feet thick placed on the foundation to form the basin of the new gabion structure, while additional layers of gabion baskets would be placed on the mattress to step up to the concrete stilling basin. A final layer of gabion baskets would be placed near the downstream end of the structure to form an end sill (Figure 7). The lower elevation of the gabion structure would be the same as the wall of the existing low flow channel on the right side of the channel. This would allow fish to escape to the

fish ladder as flows recede (Figure 8). Rip rap would be placed below the gabion structure to provide additional protection. Heavy equipment used during rehab may include excavators, cranes, trackhoes, skid steers, and dozers.

2.2.3. Water Diversion

Water is diverted from the project site each summer following high spring flows. A small push-up dam is typically used to divert this water through the east fish ladder away from the proposed action so that fish passage would not be interrupted. This diversion typically takes place each May or June and is accompanied by a fish salvage operation conducted by the Oregon Department of Fish and Wildlife (ODFW) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). As a result, work for the proposed action would be conducted in the dry, while water flows are low and when all water

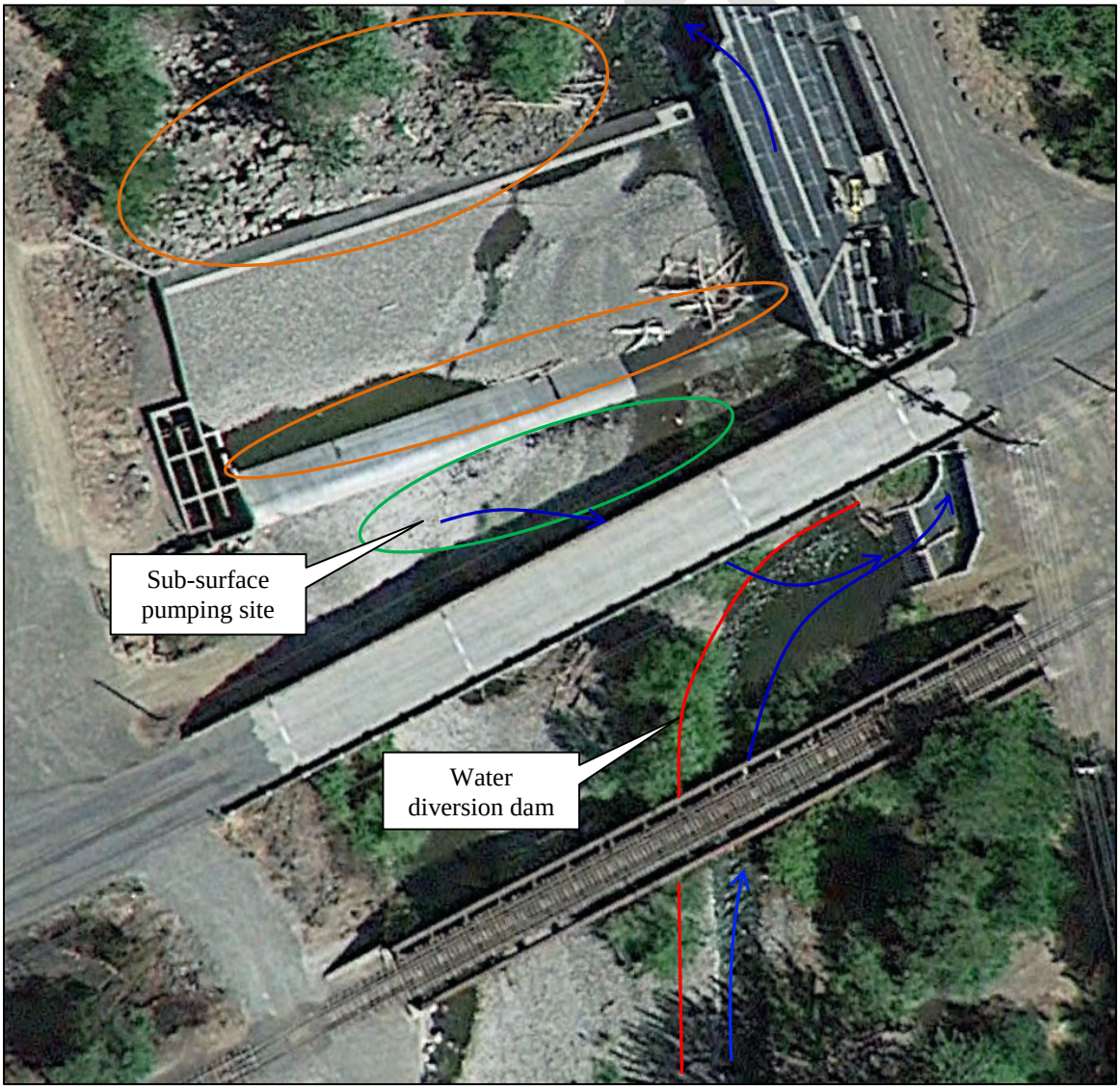

Figure 9. Aerial view of nursery bridge drop structure showing proposed diversion dams (red), pumping station (green), and work areas (orange) for the structure rehab.

is being diverted through the east fish ladder. Subsurface flows that find a way around the annual diversion dam are likely to enter the project site and may need to be diverted through pumping as shown in figure 9.

Additional fish salvage would be completed for a concurrent project being conducted by Anderson Perry and Associates (AP) under Biological Opinions issued from both the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to assist in a levee repair project being conducted for the MFWCD during the same time period. Salvage for the levee repair project would occur in mid July as water is diverted into a temporary bypass channel to move water from the east levee, where work will be conducted, to the west levee. Two temporary bridges will be constructed to provide access to both work sites.

Limited water exclusion may be required for proposed action to protect the stream and the proposed work site on the northeast corner of the project. This exclusion should not require fish salvage. To ensure no fish are harmed a qualified biologist will be on site during this phase of the project.

3. AFFECTED ENVIRONMENT AND 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. 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 (Table 1).

Table 1. Environmental Resources not evaluated further.

Environmental Component	Explanation
Aesthetics/Visual Quality	The proposed action would repair the drop structure to a its original condition and add an additional structure approximately 27 by 140 feet in area. The area is already highly disturbed and only visible upon close inspection.
Air Quality	The project area is in attainment for Oregon's ambient air quality standards. Air quality would be negligibly impacted by the action**.**
Climate Change	The Council on Environmental Quality (CEQ) in draft NEPA guidance for documenting effects of climate change directed agencies to conduct quantitative analysis of Greenhouse Gas (GHG) emissions for any project with estimated GHG emissions over 25,000 metric tons of annually. It is not anticipated that the total GHG emissions produced by the operation of excavation equipment would exceed the 25,000 metric ton GHG emission threshold.
Environmental Justice	The proposed action would have no negative impacts (e.g. economically) on any minority/ethnic group or social class.
Noise	The project area is located at the edge of Milton-Freewater in rural Umatilla county and will occur in the confines of noise blocking levees. The nearest homes are 100 yards from the site.
Recreation	No noteworthy recreation activities are pursued at the site.
Socioeconomics	Under the Proposed Alternative there would be no negative impacts to socioeconomics in the project area.

The following resource areas were evaluated: Water Quality, Aquatic Resources, Vegetation, Wildlife, Threatened and Endangered Species, Cultural Resources, and Cumulative Impacts. The Corps determined it was not necessary to conduct addition evaluation of Aesthetics/Visual Quality, Air Quality, Climate, Environmental Justice, Noise, Recreation and Socioeconomics as implementation of the proposed action would not affect these resources.

3.2. Water Quality

3.2.1. Affected Environment

The Walla Walla River and its tributaries drain about 480 square miles in Oregon. Water availability in the Walla Walla River basin is dependent on high-elevation snowpack in the Blue Mountains. Runoff occurs anytime during the precipitation period of October through May, with peaks occurring in April. Flows diminish rapidly after May, reaching their lowest levels in August and September. The Walla Walla River near Milton-Freewater is a cold water system characterized by braided channels that migrate within the confines of the levee system. Habitat degradation in the project area from urban and agricultural development, grazing, tilling, logging, recreational activities, and flood control structures have reduced both water quality and quantity. Agricultural diversions have severely impacted streamflows in the Walla Walla River since the 1880s (Neilson, 1950).

Approximately 60 percent of current water usage in the basin is used for crop irrigation (U.S. Corps of Engineers, 1997). Prior to 2000, irrigation diversions regularly dewatered sections of the Walla Walla River. In 2000, irrigation districts in Oregon maintained a minimum instream flow of 13 cubic feet per second (cfs) at Nursery Bridge in Milton-Freewater, Oregon, based on a settlement agreement with USFWS. This instream flow was increased to 18 cfs in 2001, and then increased again to 25 cfs in 2002. In 2003 and 2004, the minimum flow increased to 27 cfs through June 30th, and then decreased to 25 cfs for the remainder of the year. This additional water had an immediate effect by considerably reducing the historic dewatered area below the Nursery Bridge structure. In 2001, the Walla Walla River had continuous overland flow from Nursery Bridge to the state line for the first time in decades.

Reduced streamflows created by water withdrawals adversely affect water quality within the basin by reducing streamflows, increasing water temperatures, reducing dissolved oxygen, and increasing pH. The Walla Walla River is currently listed as impaired by the Oregon Department of Environmental Quality for low dissolved oxygen. However, water temperature likely represents the most critical physiological barrier to salmonids, particularly for passage and rearing (Mendel et al., 2000). Lethal water temperatures for salmonids range from 75 to 84 ^{o}F (Bjornn and Reiser, 1991). Mean water temperatures in the Walla Walla River range from 35 to 83 ^{o}F, while water discharge ranges from 25 cfs in late summer to 1,600 cfs during winter storms and spring runoff (Mendel et al., 2007).

3.2.2. Environmental Consequences

3.2.2.1. No Action Alternative

Under the No Action Alternative there would be no effects on water quality in the project area. The continued operation of the damaged drop structure would have no short-term effects to water quality in the project area. However, long-term effects could include the undermining and failure of the drop structure and a significant release of sediments contained upstream of the drop structure.

3.2.2.2. Proposed Alternative

Under the Proposed Alternative the effects to water quality in the project area would be less than significant. Because water would be diverted from the project site prior to the proposed action effects to water quality would be minimized. Effects, during construction, would likely include increased sediment transport and increased turbidity at the repair site and for some distance downstream. These effects would be localized and short term. To minimize sediment transport and increased turbidity, work would be conducted in the dry, while water flows are low and when all water is being diverted through the east fish ladder. Increased sediment may occur during summer storm events that can occur during the late summer and early fall. These events are rare and would be captured using secondary diversion structures such as sand bags and eco-blocks.

3.3. Aquatic Resources

3.3.1. Affected Environment

The Walla Walla River is home to several anadromous and resident fish species. Anadromous species include steelhead, Chinook salmon, western brook lamprey, and bull trout. Resident fish of the upper watershed include redband trout, mountain whitefish, and sculpin, while resident fish of the lower Walla Walla River include northern pikeminnow, chiselmouth, redside shiner, largescale sucker, and speckled dace. Non-native fish in the lower drainage include carp, channel catfish, smallmouth bass, and bluegill. Habitat at the Nursery Bridge drop structure is limiting, and few fish are found at the project site outside migration seasons. Species that may occur at the site during the year include steelhead, Chinook salmon, sculpin, whitefish, and bull trout. Potential effects to species listed under the Endangered Species Act (ESA), and efforts to minimize such potential effects, are discussed in section 3.6.

3.3.2. Environmental Consequences

3.3.2.1. No Action Alternative

Under the No Action Alternative there would be no effects on aquatic resources in the project area. The continued operation of the damaged drop structure could possibly block fish migration in the near future, while long-term effects could include the undermining and failure of the drop structure and a significant release of sediments contained upstream of the drop structure that would impact aquatic resources for some unknown distance downstream, and may block fish passage for some unknown period of time.

3.3.2.2. Proposed Alternative

Under the Proposed Alternative there would be minor, less than significant effects to aquatic resources in the project area. Effects to aquatic resources may include increased sediment and turbidity, and the conversion of cobble/boulder habitat to gabion/concrete structure. Temporary increases in suspended sediment concentrations have highly variable effects on fish, ranging from behavioral effects including alarm reactions and avoidance responses to sub-lethal effects including reduced feeding and physiological stress. Elevated turbidity can also lead to decreases in macro-invertebrate numbers in fresh water streams. To minimize the short-term effects of construction

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activities, work would be conducted in the dry, while water flows are low and when all water is being diverted through the east fish ladder (July 15 – September 30). Increased sediment may still occur during storm events that can occur during the late summer and early fall. These events are rare and would be captured using secondary diversion structures such as sand bags and eco-blocks. Lon

An estimated 3,500 square feet of marginal boulder/cobble habitat would be converted to gabion/concrete structures. The new structure would provide limited habitat for macro-invertebrate populations, and would only provide migration habitat for fish populations. However, the current habitat is marginal at best and is dry for nearly six months of the year and has little value as macro-invertebrate habitat.

3.4. Wildlife

3.4.1. Affected Environment

The diverse habitat of the Walla Walla River Basin is home to nearly 300 species of wildlife, including nearly 70 mammal species, over 200 bird species, and 25 species of reptile or amphibian. Common mammals that may occur in the project area include mule and whitetail deer, striped skunk, red fox, beaver, several species of mice, and cottontail rabbit. Birds in the area may include waterfowl species, upland game birds, song and migratory birds, and raptors.

Wildlife habitat at the project site is limited to scattered patches of shrubs and small trees with some areas of bunch grasses. Trees in the area include cottonwood, alder, and birch, while willow species are the dominant shrub species within and bordering the floodplain. The river channel is bordered by levees that are armored by rip rap, while the project footprint is almost entirely rock and cobble (Figure 2). Detailed information on non-game wildlife population numbers and locations is scarce, although in-depth data is available for most game species. Sensitive riparian species in the area may include the northern leopard frog, bald eagle, great blue heron, and yellow-billed cuckoo (Marshall et al., 1996).

3.4.2. Environmental Consequences

3.4.2.1. No Action Alternative

Under the No Action Alternative there would be no effect on wildlife in the project area. The continued operation of the damaged drop structure would have no short-term effects to wildlife in the project area. However, long-term effects could include the undermining and failure of the drop structure and a significant release of sediments and the potential loss of riparian vegetation both up- and downstream from the drop structure.

3.4.2.2. Proposed Alternative

Under the Proposed Alternative there would be minor, less than significant effects to wildlife in the project area. The concrete repair of the existing stilling basin would have no effect to wildlife species at the project site. However, the installation of a gabion/Shotcrete structure to stabilize the end sill of the existing drop structure would remove approximately 1,400 square feet of shrub habitat within the floodplain. As a result, there may be some loss of small mammal and migratory bird nesting habitat. However, most of the mammal species using this habitat would simply relocate to nearby habitats. In

addition, construction would be conducted outside nesting seasons for migratory birds and should not impact these species. The loss of shrub habitat is minor relative to existing shrub habitat in the area. The remaining habitat in the construction footprint is boulder/cobble substrate with very little wildlife value.

3.5. Vegetation

3.5.1. Affected Environment

The riparian plant community near the project site is dominated by cottonwood, alder, birch and willow, while various shrubs occur throughout the river basin and floodplain. Cultivation, logging, domestic livestock grazing, residential and commercial development, and flood control activities have affected riparian vegetation throughout much of the mid-lower elevation reaches of the subbasin. Vegetation within the project footprint is limited to small clusters of shrubs and trees that are protecting small islands of soil from the current down-cutting.

3.5.2. Environmental Consequences

3.5.2.1. No Action Alternative

Under the No Action Alternative there would be minor, less than significant effects on vegetation in the project area. The continued operation of the damaged drop structure would have minor effects on the riparian vegetation immediately below the drop structure as additional erosion undermines individual plants and washes them downstream. Long-term effects could include the undermining and failure of the drop structure and a significant release of sediments. These sediments currently hold significant riparian habitats in place above the drop structure and their loss would undermine these plants and likely damage or destroy those plants below the drop structure.

3.5.2.2. Proposed Alternative

Under the Proposed Alternative there would be minor, less than significant effects to vegetation in the project area. Grubbing and clearing in preparation for gabion installations would remove approximately 1,400 square feet of shrub and small tree habitat downstream of the existing drop structure. However, the loss of vegetation would be minor relative to currently existing habitats. Approximately 9,000 square feet of riparian vegetation is immediately adjacent to the end sill of the stilling basin, while nearly 20 acres of quality riparian habitat exists immediately upstream of the Nursery Bridge drop structure.

3.6. Threatened and Endangered Species

3.6.1. Affected Environment

On February 24, 2014 the Corps reviewed the current list of threatened and endangered species that may exist in the project area under jurisdiction of the National Marine Fisheries Service (NMFS) or U.S. Fish and Wildlife Service (USFWS) for Umatilla County, Oregon (Table 2).

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Table 2. ESA listed species that may occur in the area potentially affected by the proposed action.

Species	Scientific Name	Status	Critical Habitat
NMFS			
Middle Columbia Steelhead	*Oncorhynchus mykiss*	Threatened	Yes
USFWS			
Bull Trout	*Salvelinus confluentus*	Threatened	Yes
Gray Wolf	*Canis lupis*	Delisted	N/A
Washington Ground Squirrel	*Brachylagus idahoensis*	Candidate	N/A

Steelhead numbers have been monitored annually at the Nursery Bridge drop structure since 1993 (Figure 10). On average, 555 steelhead migrate through the fish trap annually. Migration for these fish extends from January through June with peaks in migration occurring in April and May. Most spawning occurs in March through May and smolt out-migration takes place during the following winter and spring.

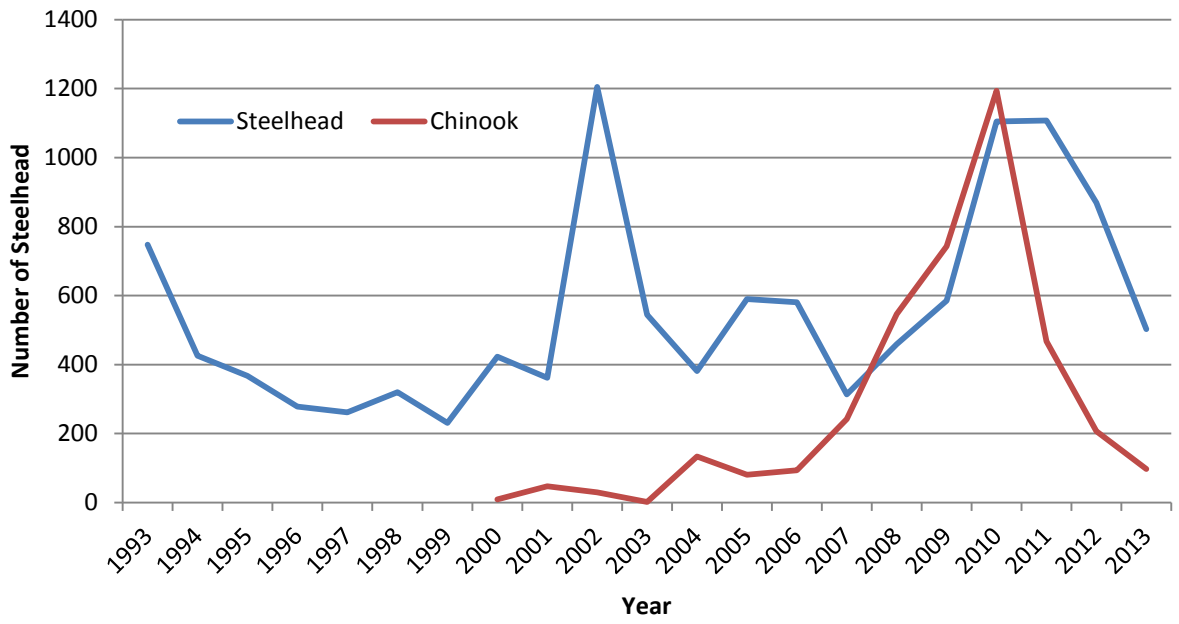

Figure 10. Number of steelhead and Chinook salmon recorded at Nursery Bridge from 1993 through 2013 (Mahoney et al. 2011).

Spring Chinook were indigenous to the basin, but were extirpated by the 1920's. The CTUIR reintroduced spring Chinook salmon to the basin in 2000 and 2001. Adults began to return to the Nursery Bridge fish ladder in 2004 and numbers of returning Chinook salmon climbed dramatically until 2010, when they begin to decline again (Figure 8). Adult spring Chinook migration season peaks in May and June.

Bull trout are found in the Upper Walla Walla River and Mill Creek. Adult bull trout move downstream from headwater tributaries after spawning in the fall, over-winter mostly in the mainstem, and return to the headwaters as temperatures warm in the spring. Based on spawning surveys, bull trout numbers are increasing with a population of 4,000 estimated in the entire Walla Walla River system. Peak upstream

migration times for bull trout at the Nursery Bridge drop structure occur in May and June, while peak downstream movements are spread out from October through March.

The gray wolf was once common throughout much of Washington and Oregon. Records exist of wolves in the vicinity of the Walla Walla Valley. Currently, wolf packs and individuals have been confirmed in southeast Washington and northeast Oregon. On May 5, 2011, the USFWS delisted the Northern Rocky Mountains Distinct Population Segment (DPS) of gray. Consequently, gray wolves are no longer listed as threatened under the ESA in the project area. In addition, habitat conditions, the high level of human activity, and a non-existent prey base in the area that is part of this proposed action make the habitat unsuitable for wolves.

Washington ground squirrels are listed as a candidate for listing under the ESA within the project area. This species spends much of its time underground. Adults emerge from hibernation between January and early March, depending on elevation and microhabitat conditions, with males emerging before females. Their active time is spent in reproduction and fattening for their six-month or longer dormancy. Washington ground squirrels inhabit dry grasslands or patches of grass and other herbaceous plants within low open sagebrush. They prefer deep, loose soil, which they need for digging burrows. The greater part of its current range is uncultivated steppe in Walla Walla, Franklin, Adams, Lincoln, and Grant Counties in Washington. There are no know Washington ground squirrels in the project area.

3.6.2. Environmental Consequences

3.6.2.1. No Action Alternative

Under the No Action Alternative there could be minor effects to Threatened and Endangered species in the project area. The continued operation of the damaged drop structure would have minor effects on the listed fish species in the project area. Short-term effects would include additional erosion at the base of the end sill, making fish migration increasingly difficult. Long-term effects could include the undermining and failure of the drop structure and a significant release of sediments and the potential loss of riparian vegetation both up- and downstream from the drop structure, and may block fish passage for an unknown period of time.

3.6.2.2. Proposed Alternative

Under the Proposed Alternative the Corps has determined that the proposed action may affect, but is not likely to adversely affect listed fish species in the project area. The Corps completed a Biological Assessment (BA) and submitted it to the USFWS and NMFS (collectively the "Services") on March 17, 2014. The primary effect to listed species would come from the repair of the concrete spillway, installation of gabion structures, placement of shotcrete, and installation of riprap. Effects of these actions would be minimized by diverting water from the work site to the fish ladder during construction to reduce sediment and maintain fish passage. Construction is expected to require 3 to 4 weeks. All work would be completed during the in-water work window when few, if any, listed salmonids would be in the project area. Long-term effects include the conversion of marginal cobble/boulder habitat to a homogonous gabion/Shotcrete structure. While this structure does not provide quality fish habitat, it does maintain fish passage and eliminates current fish salvage concerns at the base of the current spillway. For a more detailed analysis of the effects of the proposed action on threatened and endangered species see the BA (Appendix A).

3.7. Historic/Cultural Resources

3.7.1. Affected Environment

The area of potential effect (APE) for the proposed federal undertaking is the Nursery Street drop structure and the adjacent levees. The proposed rehabilitation project would involve restoring the drop structure to its pre-flood condition (w/resilience) in two locations. The drop structure is over 50 years of age, but all of the repairs are taking place within elements replaced within the last 50 years. No original elements of the structure have the potential to be affected by the proposed repairs. Furthermore, sediments immediately up and downstream of the drop structure, that may be affected, consist of recently deposited gravels or reworked riprap. So again, reworking this material does not have the potential to affect historic/cultural resources. All of the levees are accessible by existing roads, including the maintained access roads located on the levees themselves. No new roads would be constructed for this project. Equipment staging areas would be located at existing borrow areas and on the roads that form the tops of the levees.

3.7.2. Environmental Consequences

3.7.2.1. No Action Alternative

Under the No Action Alternative there may be adverse effects on Historic/Cultural Resources in the project area. The Nursery Bridge drop structure is over 50 years old, and may be eligible for protection under current laws regarding historic structures. Under the No Action Alternative the Corps would not repair the Nursery Bridge drop structure, but would allow the structure to continue to function in its damaged state. No ground disturbing activities would take place and no alterations of the structure would occur. Short-term effects would include additional erosion at the base of the spillway and below the end sill, while long-term effects could include the undermining and failure of the drop structure.

3.7.2.2. Proposed Alternative

Under the Proposed Alternative there is no potential to affect Historic/Cultural Resources in the project area. Because all of the proposed repairs are occurring within recent and re-deposited fill, and because all of the repairs are to non-historic elements of the structure, the project has no potential to affect historic/cultural resources.

3.8. Soils

3.8.1. Affected Environment

An extensive deposit of silty clay known as the Palouse Formation covers much of the uplands. Recent alluvium, consisting of clay, silt, sand, and gravel deposited by present-day rivers and streams is common in river valleys and flood plains (U.S. Department of Agriculture, 1988).

A deep deposit of loess (windblown silt and fine sand) covers much of the subbasin that is used for agricultural purposes. Loess is highly erodible, yielding sediment, particularly in the middle and lower reaches of the main stem Walla Walla River (U.S. Army Corps of Engineers, 1997).

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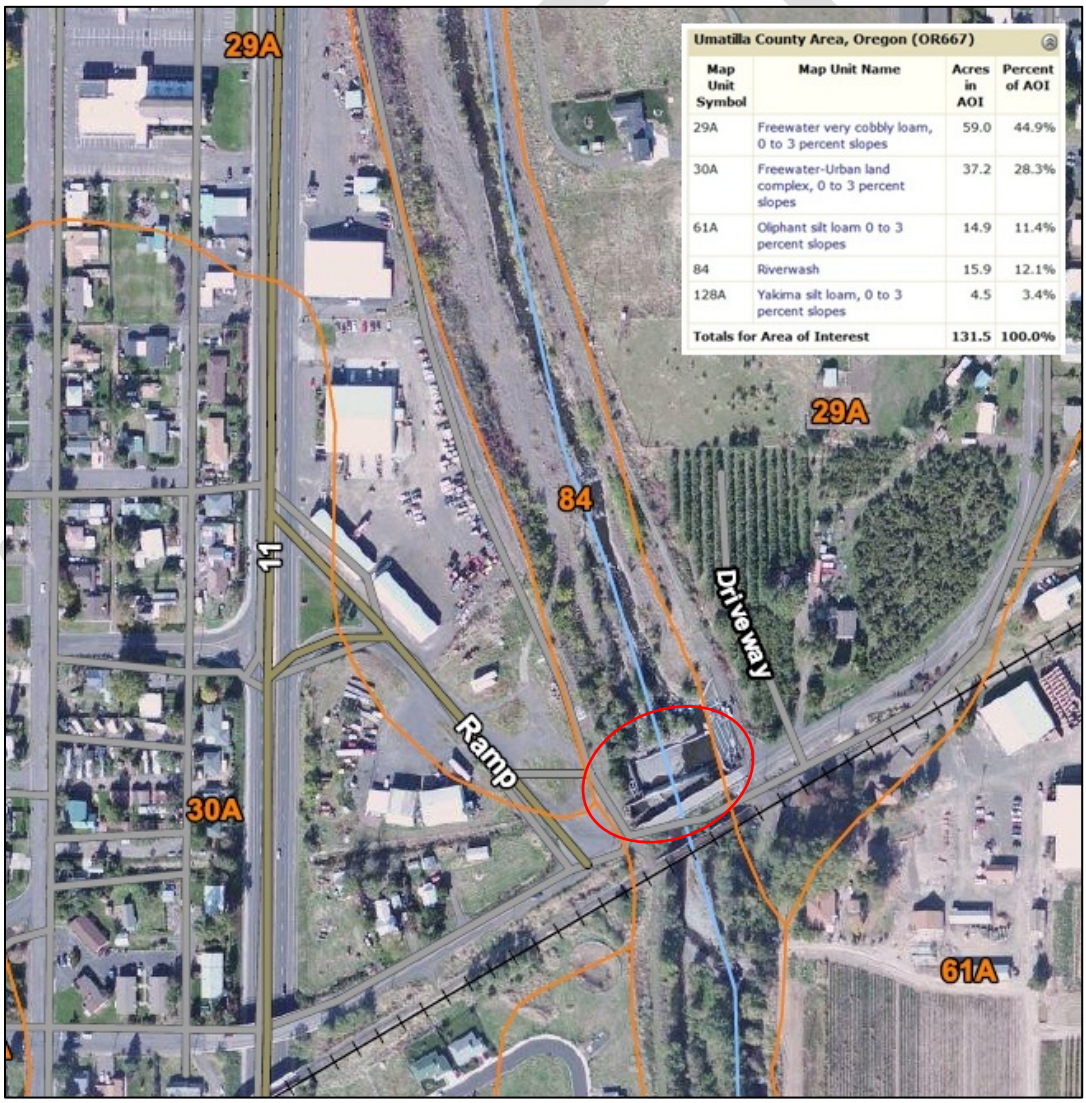
Specific soils near the project site include Freewater very cobbly loam, Freewater-urban land complex, Oliphant silt loam, riverwash, and less than 4 percent Yakima silt loam (Figure 11). Soils in the project footprint are 100 percent riverwash.

3.8.2. Environmental Consequences

3.8.2.1. No Action Alternative

Under the No Action Alternative there may be significant negative impacts to soils in the project area. The continued operation of the damaged drop structure would have minor effects on the soils immediately below the drop structure as additional water flows continue to erode soils at the site. Long-term effects could include the undermining and failure of the drop structure and a significant release of sediments and soils both up- and downstream from the drop structure. Almost all of these soils would be in channel riverwash, or soil material transported and deposited by the river.



Umatilla County Area, Oregon (OR667)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29A	Freewater very cobbly loam, 0 to 3 percent slopes	59.0	44.9%
30A	Freewater-Urban land complex, 0 to 3 percent slopes	37.2	28.3%
61A	Oliphant silt loam 0 to 3 percent slopes	14.9	11.4%
84	Riverwash	15.9	12.1%
128A	Yakima silt loam, 0 to 3 percent slopes	4.5	3.4%
Totals for Area of Interest		131.5	100.0%

Figure 11. Map of the soils in the project area.

3.8.2.2. Proposed Alternative

Under the Proposed Alternative there would be minor, less than significant short-term effects on soils in the project area. Long-term effects would be positive. Excavation of the site to prepare for the installation of a gabion/Shotcrete structure would cause minor disturbances to an already disturbed site. Approximately 3,500 square feet of riverbed would need to be leveled to prepare for the placement of gabion baskets, while an additional 2,000 square feet of area would be covered with protective riprap. Cobble from the project site and from the stilling basin cleanout would be used to fill the gabion baskets. The new gabion/Shotcrete structure would allow high water flows to drop an additional 7 foot from the current stilling basin into the new structure before being released into the stream channel. The new structure would reduce erosion and minimize soil loss.

3.9. Cumulative Impacts

The National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations implementing NEPA 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 reasonable 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.

Because other resources are not likely to be affected at the study site, cumulative effects analyses for the proposed action will focus on Aquatic Resources and Threatened and Endangered Species. The area of analysis (given the proposed work and potential direct/indirect effects) includes the Nursery Bridge Drop Structure, its associated levee system, and the Walla Walla River and streambed for a distance of 500 feet up-and down-stream from the drop structure.

Historically the Walla Walla River was a free flowing river that experienced seasonal fluctuations in flow. High spring runoffs that were driven by winter snow accumulation, followed by relatively low flows in the summer and fall. Alterations of the hydrology of the Walla Walla River Basin began in the late 1800s as water withdrawals to support agricultural production and community development commenced (Nielson 1950). Water within the basin is now considered to be over allocated and reductions in stream flow have adversely impacted aquatic resources. These impacts include dewatering sections of the Walla Walla River, disrupted sediment transport, and elevated summer water temperatures (Mendel et al. 2007). The Walla Walla River is currently listed as impaired by the Oregon Department of Environmental Quality for low dissolved oxygen. However, water temperature likely represents the most critical physiological barrier to salmonids, particularly for passage and rearing (Mendel et al., 2000).

Spring Chinook salmon, summer steelhead, and bull trout were historically abundant in the Walla Walla River. Spring Chinook annual returns were reduced dramatically following the construction of Nine Mile Dam on the Walla Walla River in 1905 (Nielsen 1950). The last significant spring Chinook salmon run was in 1925, and by the 1950s the run was extirpated. Summer steelhead and bull trout still survive in the drainage, but numbers are well below historical levels (NMFS 2009, USFWS 2002). Factors that led to these reductions continue to exert substantial influence on anadromous fish abundance and production. These factors include: habitat loss, grazing, irrigation diversions, reduced

stream flows, impaired passage, embedded stream substrates, degraded water quality, and altered channel morphology (NMFS 2005). Despite efforts to increase numbers of listed fish they remain low. During the 2013 migration season only 503 adult steelhead were counted at the Nursery Bridge fish ladders.

Recent efforts to restore these fish populations include summer instream flows and the installation of grade control structures to provide access to fish passage facilities. In 2000, irrigation districts in Oregon maintained an instream flow of 13 cubic feet per second (cfs) at Nursery Bridge. This instream flow was increased to 18 cfs in 2001, and then to 25 cfs in 2002. In 2003 and 2004, the minimum flow increased to 27 cfs through June 30th, and then decreased to 25 cfs for the remainder of the year. This additional water had an immediate effect by considerably reducing the historic dewatered area below the Nursery Bridge structure. These summer instream flows are expected to continue in the future.

The Milton-Freewater levee system was constructed from 1945 to 1952 to protect the town of Milton-Freewater from flood risk. As part of the levee system, the Nursery Bridge drop structure was constructed in 1952. In 1966 the Corps added a fish ladder for fish passage on the west shore of the drop structure. However, changes in river flows shifted from the west shore to the east shore; essentially leaving the fish ladder dry. In 2001, a new fish ladder was constructed on the east shore. In 2010 the drop structure sustained damage from flood flows to the concrete face and the protective riprap below the end sill. The dam was refaced and the riprap replaced. Flood flows during April 2013 again damaged the toe of the drop structure and displaced the riprap from the end sill. Future projects that may impact the action area include: a levee rehabilitation project conducted by the MFWCD to repair 3,000 feet of the toe of the east levee beginning just below the east shore fish ladder; a hatchery construction project proposed by the CTUIR for spring Chinook salmon near Milton-Freewater, Oregon; and the installation of grade control structures immediately below the east shore fish ladder entrance to improve access for anadromous salmonids in the system. Future grade control alterations will likely be required to prevent additional degradation to the stream channel.

Potential effects on aquatic resources (including T&E species) associated with the proposed action are not expected to result in significant impacts to the human environment, even when considered/added to other past, present and reasonable foreseeable future actions.

4. COMPLIANCE WITH APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

4.1. National Environmental Policy Act

This environmental assessment was prepared pursuant to regulations implementing the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.). NEPA provides a commitment that Federal agencies will consider the environmental effects of their proposed actions and involve the public in such decision making. Completion of this environmental assessment and signing of a Finding of No Significant Impact (FONSI), if applicable, fulfills the requirements of NEPA.

4.2. Endangered Species Act

The Endangered Species Act (ESA) established a national program for the conservation of threatened and endangered fish, wildlife and plants and the habitat upon which they depend. Section 7(a)(2) of the

ESA requires Federal agencies to consult with the Services, as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their critical habitats.

The Corps has determined that this action, as proposed, may affect, but is not likely to adversely affect listed species or their designated critical habitats (Appendix A: Biological Assessment for the Milton-Freewater Nursery Bridge Drop Structure Rehabilitation – Dated March 14, 2014). Informal consultation was initiated on March 17, 2014 when the Corps issued its BA to the Services. On April 11, 2014 the Corps received a (BO) from the NMFS finding that the proposed action is not likely to jeopardize the continued existence of ESA listed Middle Columbia River steelhead, or result in the destruction or adverse modification of their designated critical habitats (Appendix B: NMFS Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation, Repair of the Nursery Bridge Drop Structure, Milton-Freewater, Umatilla County, Oregon. NMFS Consultation Number: NWR-2014-594). The Corps anticipates receiving a similar BO from the USFWS prior to signing a FONSI, unless an EIS is determined appropriate.

Fish salvage would be conducted by the ODFW, CTUIR, and AP, as described in Section 2.2.3 above (Water Diversion). This water diversion, and fish salvage, would occur at least one month prior to project implementation. Fish passage data reveals a dramatic drop in fish numbers in early summer as water discharge drops and water temperatures rise. Consequently, the Corps believes additional fish salvage, after construction begins, would not be necessary. Additionally, a simple construction plan (Plan) which coordinates the multiple projects at the site is proposed. Meetings are scheduled with the project leaders from concurrent projects at Nursery Bridge to coordinate efforts so that construction would proceed in an organized manner. Planning information would be provided to the services as soon as it is available. The Plan, when finalized, will be incorporated into the BA as an attachment and provided to the Services.

4.3. National Historic Preservation Act

The National Historic Preservation Act (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 (NRHP). The NHPA implementing regulations, 36 Code of Federal Regulations (CFR) Part 800, requires that the federal agency consult with the State Historic Preservation Officer (SHPO), Tribes and interested parties to ensure that all historic properties are adequately identified, evaluated and considered in planning for proposed undertakings.

Under the Proposed Alternative there is no potential to affect Historic/Cultural Resources in the project area. Because all of the proposed repairs are occurring within recent and re-deposited fill, and because all of the repairs are to non-historic elements of the structure, the project has no potential to affect historic/cultural resources.

4.4. Clean Water Act

The Clean Water Act (CWA) of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.

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. 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 project meets the requirements of Nationwide Permit 3, which reads, in part, "The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized." Nationwide Permit 3 is water quality certified by the state of Oregon subject to all applicable NWP general conditions. These include visual turbidity monitoring, stormwater discharge pollution prevention, and protection of natural resources.

5. COORDINATION, CONSULTATION, AND PUBLIC INVOLVEMENT

5.1 Agency Consultation and Coordination

This EA is being distributed for public and agency review and comment and is also available through the Walla Walla District Corps of Engineers website at www.nww.usace.army.mil. The primary distribution list is found in table 3.

Table 3. List of individuals or agencies for distribution of this EA.

Individual	Organization
John Wells	Anderson Perry & Associates
John Zerba	Hudson Bay District Improvement Company
Linda Hall	City of Milton-Freewater, Oregon
Larry Givens	Umatilla County, Oregon
Vern Rodighiero	Milton-Freewater Water Control District
Bill Duke	Oregon Department of Fish and Wildlife
Duane Smith	Oregon Department of Environmental Quality
Susan Haylock	Oregon State Historic Preservation Office
Gary James	Confederated Tribes of the Umatilla Indian Reservation
Don Rose	Bonneville Power Administration
Diane Driscoll	National Marine Fisheries Service
John Stephenson	U.S. Fish and Wildlife Service
Christine Reichgott	U.S. Environmental Protection Agency
Scott Maguire	Senator Jeff Merkley's Office
Ron Wyden	Senator Ron Wyden's Office
Kirby Garrett	Congressman Greg Walden's Office

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5.2 Public Involvement

This EA is being made made available to potentially interested members of the public and local, state, and federal agencies for a 20-day review and comment period.

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APPENDIX A

Section 7 – Biological Assessment for the Milton-Freewater Nursery Bridge Drop Structure Rehabilitation

US Army Corps of Engineers
Walla Walla District

BUILDING STRONG®

MILTON-FREEWATER NURSERY BRIDGE DROP STRUCTURE REHABILITATION

PM-EC-2013-0090

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

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

March 2014

SUMMARY

This biological assessment (BA) is prepared pursuant to section 7(a)(2) of the Endangered Species Act (ESA) to evaluate effects of the U.S. Army Corps of Engineers proposed rehabilitation of the Milton-Freewater Nursery Bridge drop structure on listed species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS).

The Corps concludes that the proposed project may affect, but is not likely to adversely affect, Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) and bull trout (*Salvelinus confluentus*). The Corps also concludes that the project will have no effect on Washington ground squirrel (*Urocitellus washingtoni*). In addition, this document analyzes the project's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The Corps also determined that the proposed project would result in no take of species listed under the Migratory Bird Treaty Act (MBTA), and no disturbance or take under the Bald and Golden Eagle Protection Act (BGEPA).

If additional information regarding this document is required, please contact Charles Chamberlain, Biologist in the Environmental Compliance Section of the U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7298, or by email at charles.b.chamberlain@usace.army.mil. Other correspondence can be mailed to:

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Acronym Glossary

BGEPA	Bald and Golden Eagle Protection Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
Corps	Walla Walla District, U.S. Army Corps of Engineers
DPS	Distinct Population Segment
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
HMU	Habitat Management Unit
HUC	Hydrologic Unit Code
MBTA	Migratory Bird Treaty Act
MCR	Middle Columbia River
MPG	Major Population Group
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
PCE	Primary Constituent Element
PFMC	Pacific Fishery Management Council
PL	Public Law
RM	River Mile
USFWS	U.S. Fish and Wildlife Service

1. Introduction

The U.S. Army Corps of Engineers, Walla Walla District (Corps), proposes to repair the Nursery Bridge drop structure in Milton-Freewater, Oregon (Figure 1). The structure was damaged by a high flow event on April 20, 2013.

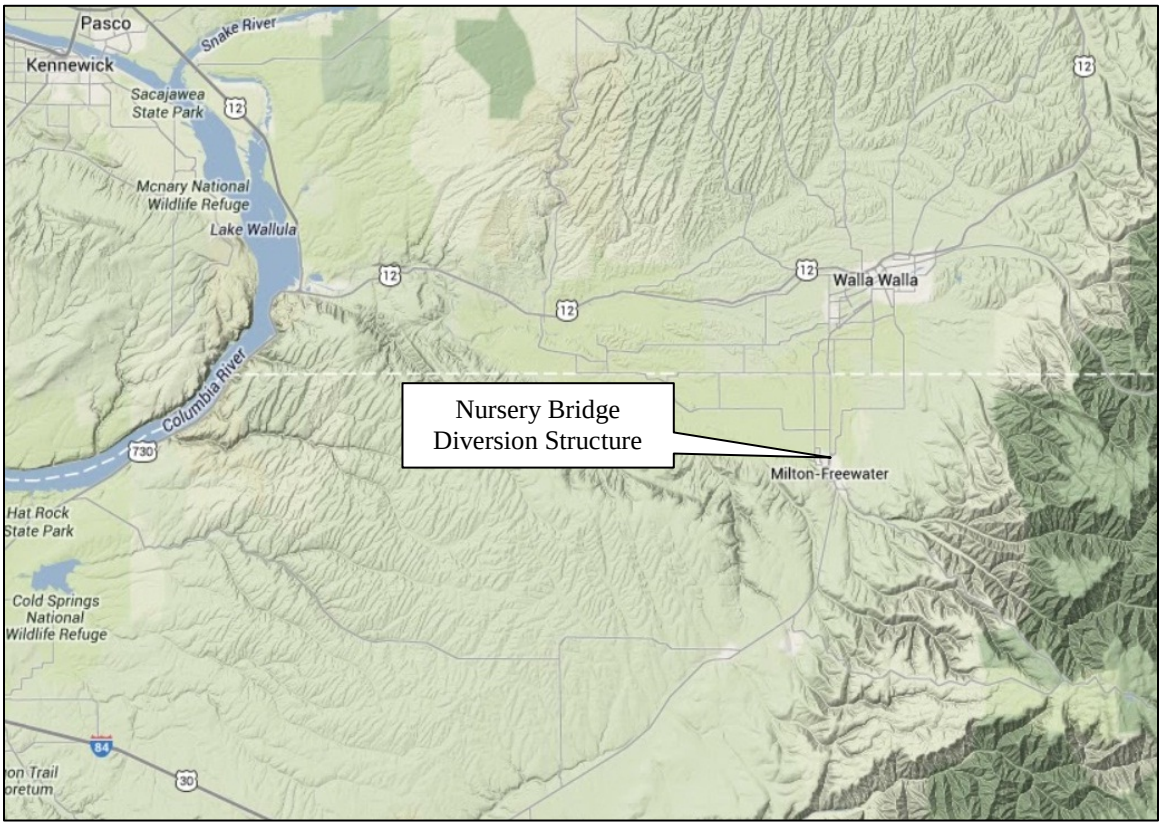


Figure 1. Location of the Nursery Bridge drop structure in Milton-Freewater, Oregon.

Damage to the structure includes displaced riprap immediately downstream of the end sill (Figure 2) and eroded concrete at the toe of the spillway (Figure 3). High flows displaced riprap exposing the end sill to a depth of approximately six feet. Erosion along the toe of the spillway has exposed rebar and removed a section of concrete about 16 inches long and 7 inches deep. There is also damage to the 1:1 concrete slope.

The Nursery Bridge drop structure is being repaired under Public Law (PL) 84-99. Under this law the Chief of Engineers, acting for the Secretary of the Army, is authorized to undertake activities including disaster preparedness, Advance Measures, emergency operations (Flood Response and Post Flood Response), rehabilitation of flood control works threatened or destroyed by flood, protection or repair of federally authorized shore protective works threatened or damaged by coastal storm, and provisions of emergency water due to drought or contaminated source. Eligible flood protection systems can be rehabilitated if damaged by a flood event. The flood system would be restored to its pre-disaster status.

Figure 2. Picture showing the loss of riprap from the toe of the end sill.

Figure 3. Picture showing damage (exposed rebar) at the toe of the drop structure.

2. Project Description

The Corps proposes to repair the Nursery Bridge drop structure in Milton-Freewater, Oregon.

2.1. Project Location

The Nursery Bridge drop structure is located at the intersection of the Walla Walla River and the Eastside road just east of Milton-Freewater, Oregon (Figure 4). The drop structure protects the Eastside road and a railroad line, and supports the diversion of water for a local canal company.

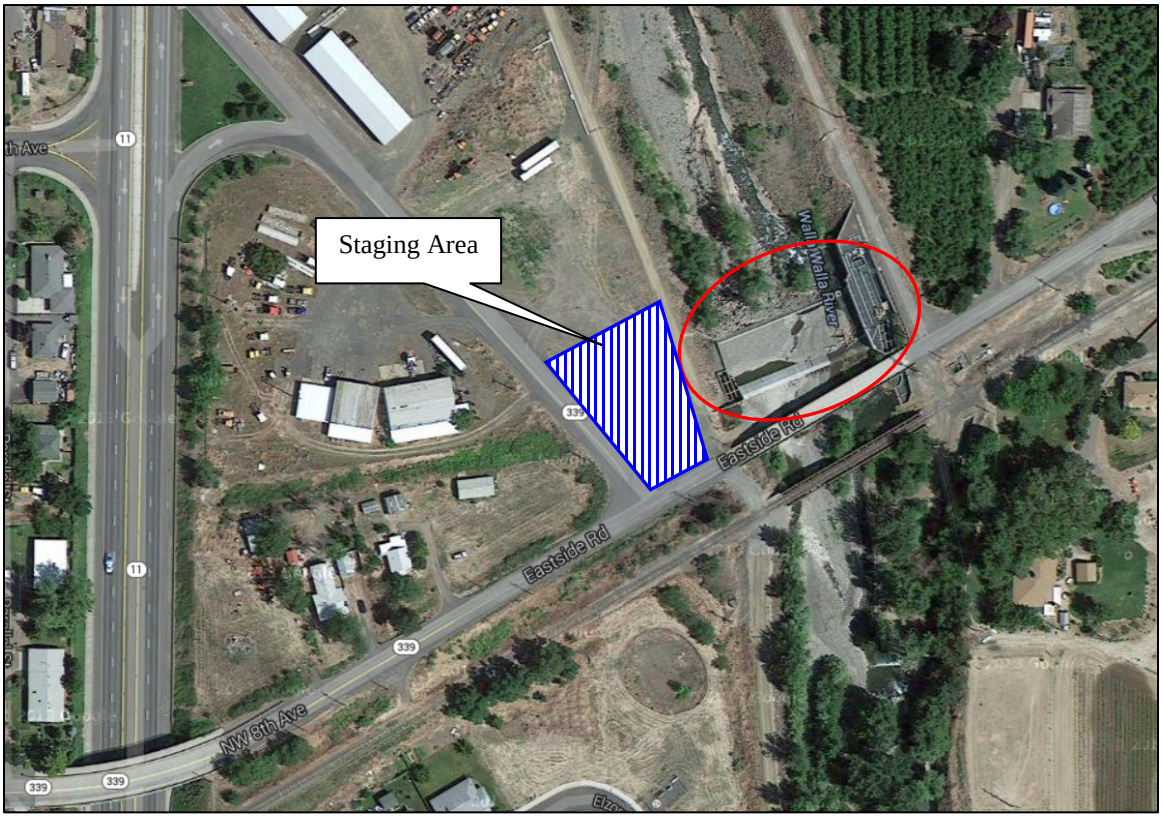


Figure 4. Aerial view of the Nursery Bridge drop structure repair site and possible staging area.

2.2. Proposed Action

The proposed repair is divided into two sections; concrete repair at the toe of the spillway, and riprap replacement at the end sill.

Water Diversion: Water will be diverted from the work site so that repairs will be done in the dry. Water diversion and fish salvage will be completed by the Milton-Freewater Water Control District as part of a levee repair project they are completing during the same time period. A small push-up dam will be used to divert water through the east fish ladder away from the proposed action. Fish passage will not be interrupted. Subsurface flows will be diverted through pumping as shown in figure 6.

Concrete Repair: If erosion of the spillway base continues it could eventually penetrate the concrete and jeopardize the drop structure, fish ladder, diversion head-gate, and both upstream bridges. To protect the structure, grout will be used to repair damaged areas of the spillway and the base of the spillway will be armored with a steel plate to prevent the reoccurring erosion of the site. The steel plate will be anchored to the bottom of the stilling basin and will protect approximately 3 feet of the base of the structure and 3 feet of the slope. The plate will be recessed and grouted to provide a smooth transition to the existing structure (Figure 5).

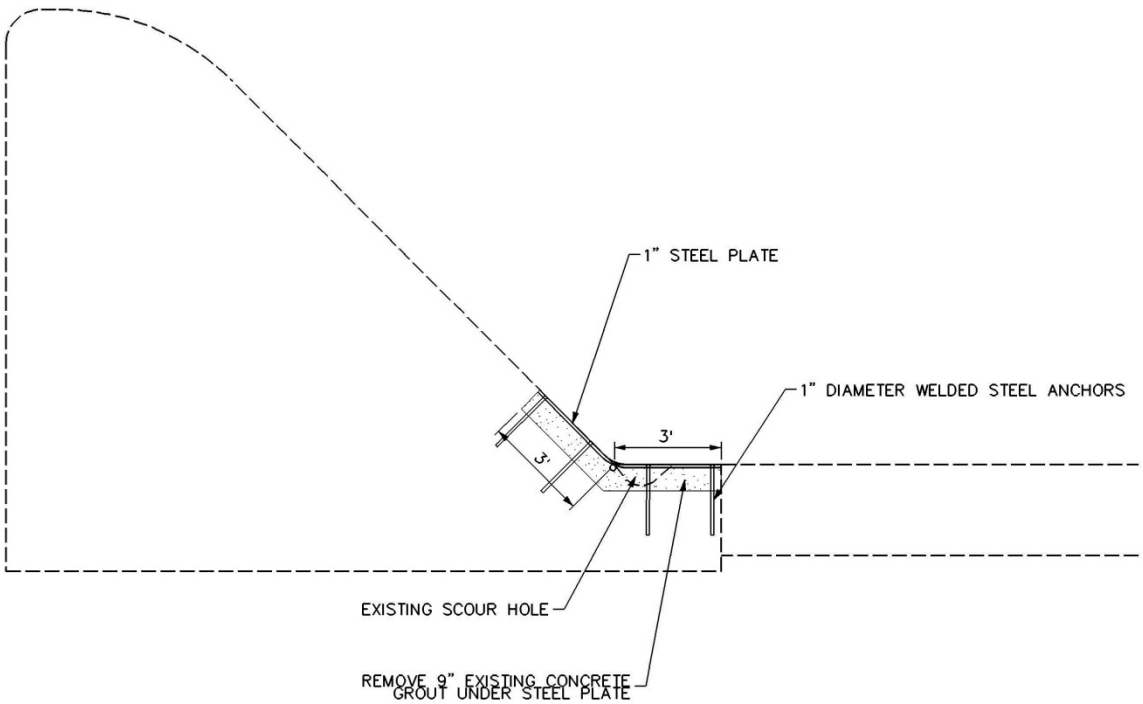


Figure 5. Plan view of spillway toe showing proposed repairs.

Riprap Repair: Previous installations of riprap to protect the drop structure have failed. To prevent similar failures a gabion structure will be installed to stabilize the stream channel immediately downstream from the end sill. The gabion apron will extend out from the end sill of the drop structure approximately 27 feet. Gabion baskets will be arranged in the shape of an extended stilling basin and covered with Shotcrete to prevent entrapment of listed fish (Figures 7 and 8).

The area below the stilling basin will be leveled and gabion baskets will be placed below the streambed elevation to form a foundation upon which to construct the gabion mattress. A mattress of gabion baskets 1.5 feet thick will be placed on this foundation and additional levels of gabion baskets will be placed on the mattress to step up to the concrete stilling basin. A final layer of gabion baskets will be placed near the downstream end of the gabion structure to form an end sill (Figure 8). The gabion mattress will be set approximately 7 feet below the lip of the existing stilling basin level with the low flow apron of the fish ladder on the east bank, and will allow fish to exit the gabion stilling basin into low flow channel near the fish ladder (Figure 9).

Rip rap will be placed below the gabion structure to provide additional protection. Heavy equipment used during rehab may include excavators, cranes, trackhoes, skid steers, and dozers.

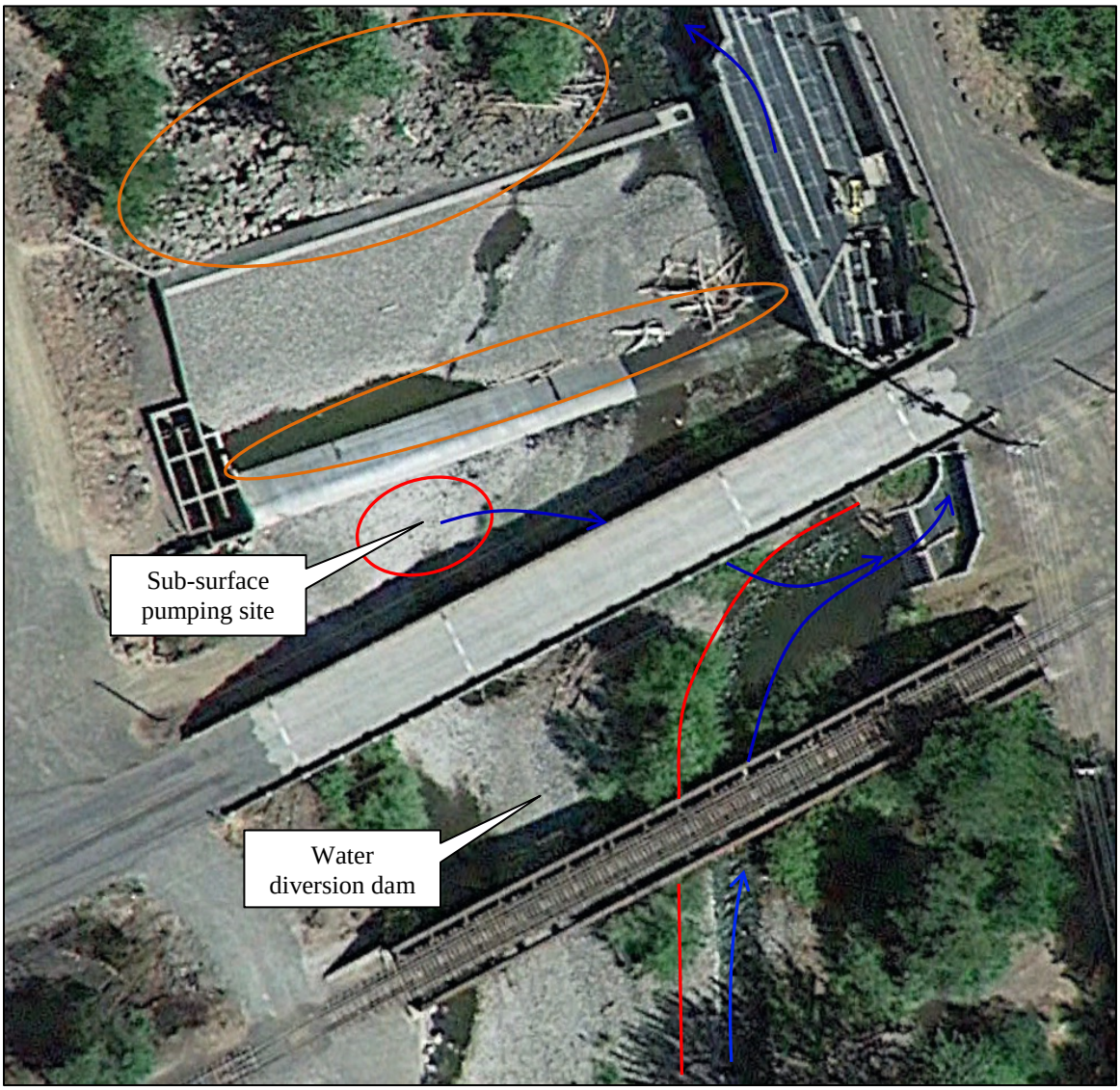


Figure 6. Aerial view of Nursery Bridge drop structure showing proposed coffer dams (red), pipes (green), pumping stations, and work areas (orange) for the structure rehab.

2.3. Project Timeline

All repairs are projected to be completed during the in water work window of 2014 (July 1 – September 30).

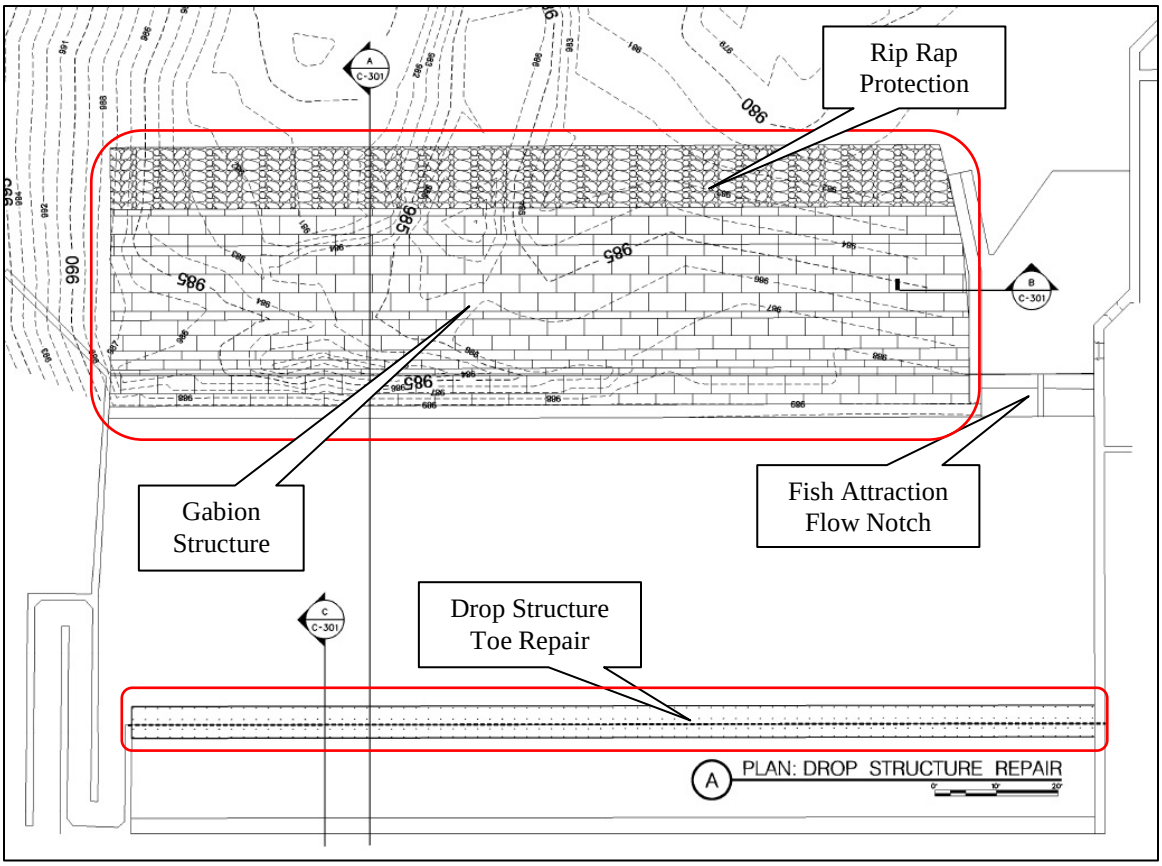


Figure 7. Aerial view of plans showing the installation of a gabion apron to stabilize the stream channel below the end sill of the drop structure.

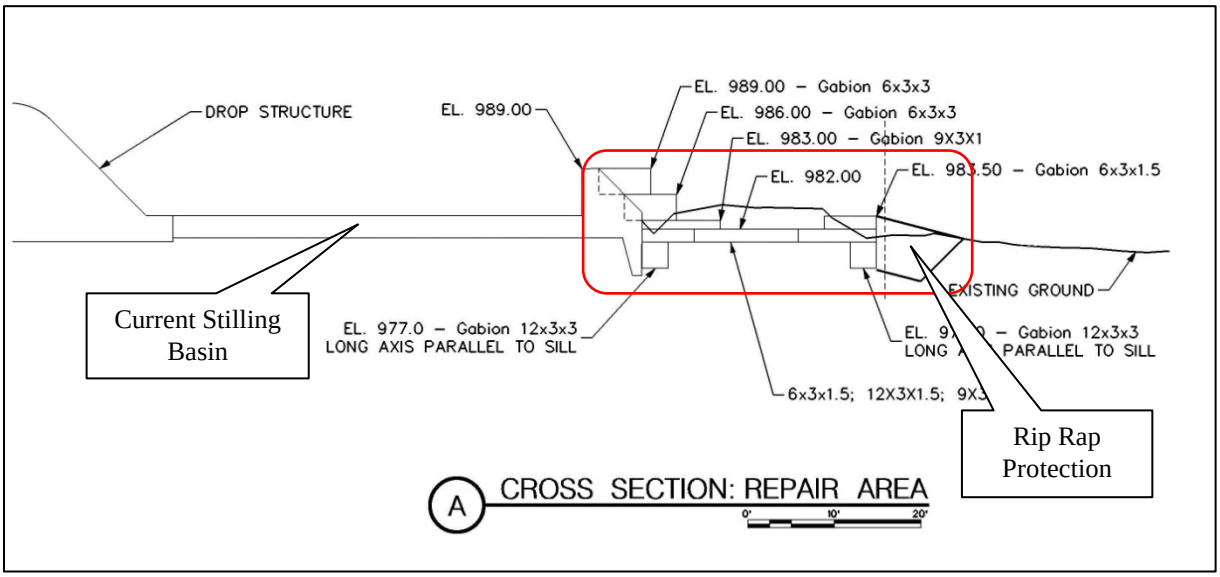


Figure 8. Cross section view of plans showing the installation of a gabion apron to stabilize the stream channel below the end sill of the drop structure.

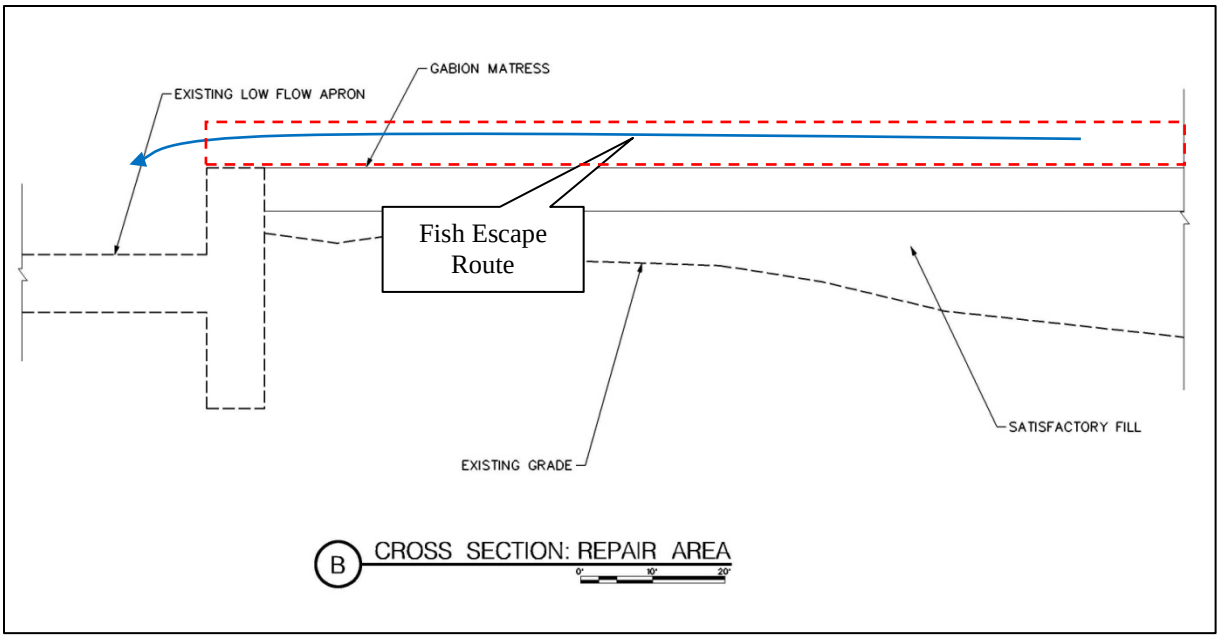


Figure 9. Cross section of plans (looking upstream) showing gabion mattress in relation to low flow fish attraction channel.

3. Status of Species and Critical Habitat

3.1. Species Lists from NMFS and USFWS

The Corps reviewed the list of threatened and endangered species that pertain to the area under the jurisdiction of the NMFS and the USFWS on February 24, 2014 (Table 1). Because the project occurs primarily in the stream channel it was determined that the proposed action would have "No Effect" on the Washington ground squirrel or gray wolf. As a result, these species will not be discussed in detail.

Table 1. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation.

Species	Listing Status	Critical Habitat	Protective Regulations
steelhead (*O. mykiss*)			
Middle Columbia River	T: 1/05/06; 71 FR 834	Yes: 02/16/00; 65 FR 7764	07/10/00; 65 FR 42422
bull trout (*Salvelinus confluentus*)			
Columbia River DPS	T: 6/10/98; 63 FR 31647	Yes: 9/02/05; 70 FR 56211: 10/18/10; 75 FR 63898	
gray wolf (*Canis lupus*)			
Northern Rocky Mountain DPS	DL: 5/5/11; 76 FR 25590	Not applicable	Not applicable
Washington ground squirrel (*Brachylagus idahoensis*)			
Columbia Basin DPS	C: 11/30/01; 66 FR 59769	Not applicable	

3.2. Status of Species

3.2.1. Middle Columbia River Steelhead

3.2.1.1. Listing History

Middle Columbia River steelhead were first listed as threatened March 25, 1999 (64 FR 14517) and reaffirmed as threatened on January 5, 2006 (71 FR 834). Protective regulations were issued on June 28, 2005 (70 FR 37160) and critical habitat for this DPS was listed on September 5, 2005 (70 FR 52630).

3.2.1.2. Life History/Biological Requirements

Steelhead exhibit one of the most complex group of life history traits of any species of Pacific salmonid. These fish can be anadromous (migratory) or freshwater residents (and under some circumstances, apparently yield offspring of the opposite form). Steelhead can spawn more than once (iteroparous), whereas most other salmonids spawn once and then die (semelparous).

Within the range of West Coast steelhead, spawning migrations occur throughout the year, with seasonal peaks of activity. Most steelhead can be categorized as one of two run types, based on their sexual maturity when they re-enter freshwater and how far they go to spawn. In the Columbia River, summer steelhead enter freshwater between May and October and require several months to mature before spawning; winter steelhead enter freshwater between November and April with well developed gonads and spawn shortly thereafter. Winter steelhead are called ocean-maturing or coastal type, and summer steelhead, stream-maturing or inland type. The Middle Columbia River steelhead DPS includes the only populations of inland winter steelhead in the United States, in the Klickitat River, White Salmon River, Fifteenmile Creek, and possibly Rock Creek.

Steelhead spawn in clear, cool streams with suitable gravel size, depth, and current velocity. Productive steelhead habitat is characterized by complexity, primarily in the form of large and small woody structure. Steelhead may enter streams and arrive at spawning grounds weeks or even months before they spawn and are therefore vulnerable to disturbance and predation. They need cover, in the form of overhanging vegetation, undercut banks, submerged vegetation, submerged objects such as logs and rocks, floating debris, deep water, turbulence, and turbidity.

Young steelhead typically rear in streams for some time before migrating to the ocean as smolts. Steelhead smolts have been shown to migrate at ages ranging from 1 to 5 years throughout the Columbia Basin, but most steelhead generally smolt after 2 years in freshwater (Busby et al. 1996). Most steelhead spend 2 years in the ocean before migrating back to their natal streams. Once in the river, steelhead rarely eat and grow little, if at all.

3.2.1.3. Distribution

Middle Columbia River steelhead include all naturally spawned populations of steelhead in drainages upstream of the Wind River, Washington, and the Hood River, Oregon, up to, and including, the Yakima River, Washington. Major drainages in this DPS are the Deschutes, John

Day, Umatilla, Walla Walla, Yakima, and Klickitat river systems (Figure 9). The Cascade Mountains form the western border of the plateau in both Oregon and Washington, while the Blue Mountains form the eastern edge. The southern border is marked by the divides that separate the upper Deschutes and John Day basins from the Oregon High Desert and drainages to the south. The Wenatchee Mountains and Palouse areas of eastern Washington border the Middle Columbia on the north (NMFS 2009).

Figure 9. Steelhead distribution in the Middle Columbia River basins.

3.2.1.4. Factors for Decline

All populations of Middle Columbia steelhead use the mainstem Columbia River to migrate to and from the ocean, and all are affected by the mainstem Federal dams, as well as by other forms of development that alter the river environment. Mainstem Columbia River conditions include impaired fish passage, altered water temperature and thermal refuges, and changes in mainstem nearshore habitat (NMFS 2009). In addition, changes in the Columbia River have altered the relationships between salmonids and other fish, bird, and pinniped species. Increases in competition with other fish species and predation from non-native fishes, birds, and pinnipeds continues to limit recovery of salmonid species in the Columbia River.

3.2.1.5. Local Empirical Information

Middle Columbia River Basin steelhead utilize the project area for migration habitat. Adult steelhead have been regularly counted at Nursery Bridge since 1993. Traps were used to collect, identify and count fish until 2001, when video equipment was installed. Since switching to video, variations in video quality caused by poor lighting, stream turbidity, and algal growth on the viewing window made it difficult to differentiate between hatchery and natural origin fish at times (Mahoney et al. 2009). Abundance estimates show the 30-year average for summer steelhead in the Walla Walla Subbasin, as counted at the Nursery Bridge, to be 546 fish (ODFW 2005). Counts of adult Middle Columbia Steelhead at Nursery Bridge are shown in figure 10.

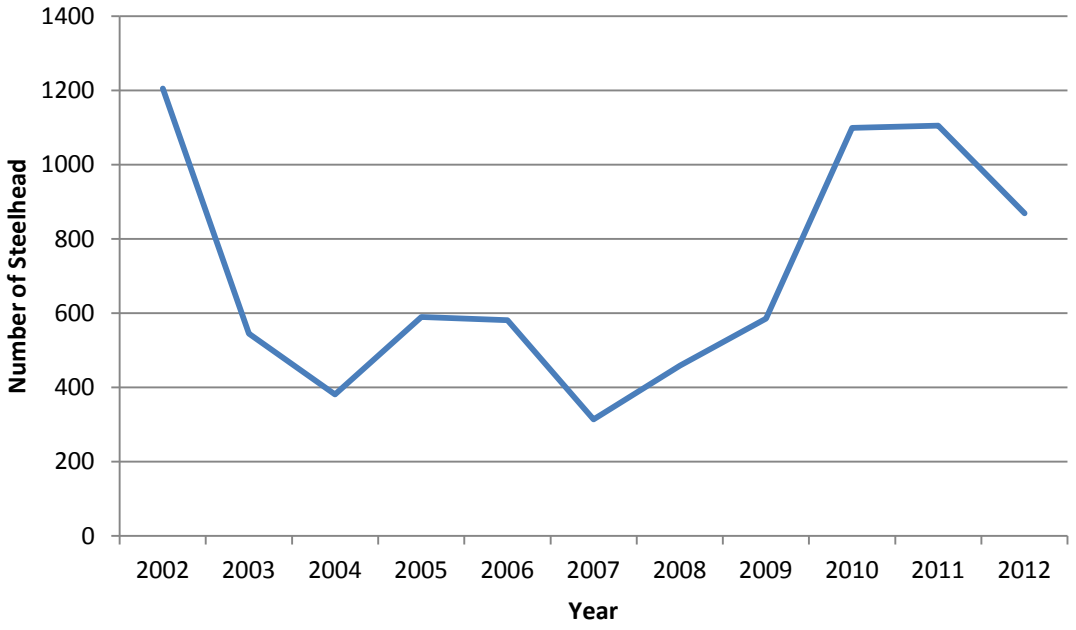


Figure 10. Adult steelhead counts at Nursery Bridge Diversion (Mahoney et al 2012).

Although steelhead may be found in the project area year round, data suggests that the peak return months for summer steelhead passing through Nursery Bridge are March and April (Mahoney et al. 2009 and Mahoney et al. 2011).

3.2.2. Bull Trout

3.2.2.1. 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. 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.

3.2.2.2. 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. Resident and juvenile bull trout prey on insects, zooplankton and small fish. Adult migratory bull trout mainly eat other fish.

3.2.2.3. Distribution

Bull trout are commonly found in the upper reaches of the Walla Walla Subbasin, but it is unclear if the lower reaches of the Walla Walla River were ever used extensively by bull trout. Water temperature, more than any other factor, appears to influence the presence of bull trout. Tagging studies show that movement of bull trout in the Walla Walla Basin is limited, with the exception of the fluvial migration between June and November. The Bull Trout Recovery Plan for the Walla Walla Subbasin includes a goal to ensure that fish can move between spawning and wintering areas, and to ensure that movement can occur between local populations with each core area in a recovery unit. Specific recommendations include providing passage at the Nursery Bridge Dam.

3.2.2.4. Factors for Decline

Bull trout are estimated to have occupied about 60 percent of the Columbia Basin and presently occur in only about 45 percent of their historic range. The decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices and the introduction of non-native species. Declining

salmon and steelhead populations could also negatively impact bull trout populations by reducing the number of juvenile salmon and steelhead that bull trout might prey on. Altered flow regimes, sedimentation rates, bank erosion and reduced channel complexity all reduce the quality of bull trout habitat. Barriers between isolated populations continue to be a limiting factor for most of the bull trout subpopulations in the Columbia Basin.

3.2.2.5. Local Empirical Information

Resident and fluvial bull trout occur in the Walla Walla River above Milton-Freewater, and fluvial bull trout have been found migrating downstream to the Columbia River (Anglin 2010). Adult and sub-adult rearing is documented from the forks of the Walla Walla River downstream to the Cemetery Bridge in Milton-Freewater.

Video surveillance conducted at Nursery Bridge suggests that bull trout migrate through the Project area between April and June, with the peak being from March until May. Downstream migration of both juvenile and adults occurs between October and February. Figure 11 shows the number of bull trout counted using video surveillance at Nursery Bridge between 2001 and 2012.

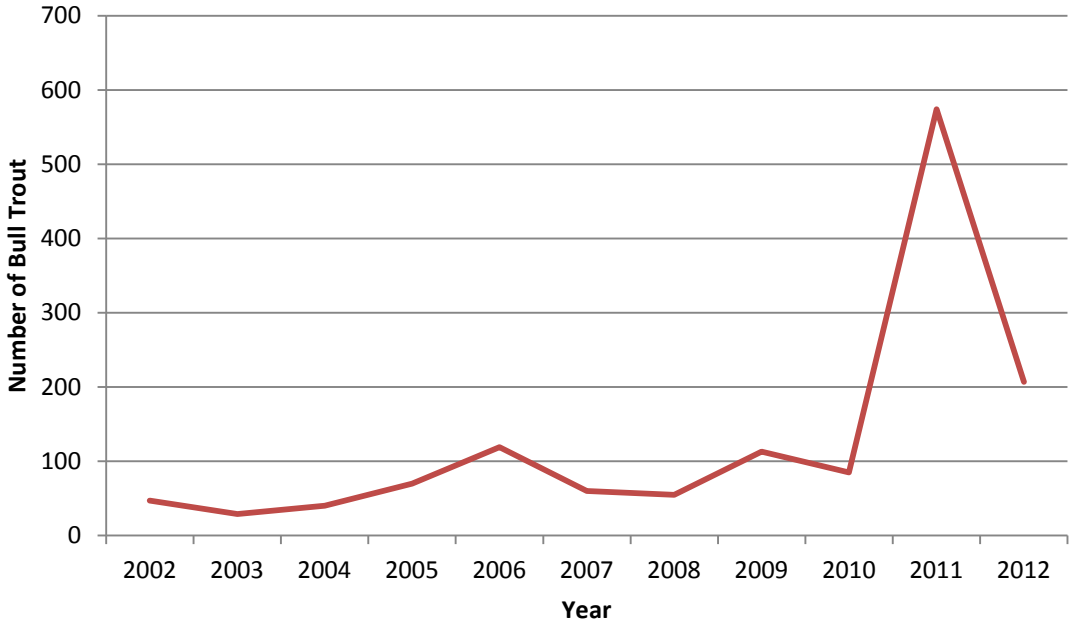


Figure 11. Trend in bull trout video surveillance counts at Nursery Bridge 2002-2012.

3.3. Status of Critical Habitat

The designating of critical habitat focuses on certain habitat features called “primary constituent elements” (PCEs) that are essential to support one or more of the life stages of salmonid fishes. The PCEs for listed salmon and steelhead in the project area are broken into two groups based on these life history requirements.

3.3.1. Middle Columbia River Steelhead

Critical habitat for middle Columbia River steelhead includes streams, rivers and lakes in the middle Columbia River basin, including the following subbasins: Upper Yakima, Naches, Lower Yakima, Middle Columbia/Lake Wallula, Walla Walla, Umatilla, Middle Columbia/Hood, Klickitat, Upper John Day, North Fork John Day, Middle Fork John Day, Lower John Day, Lower Deschutes, Trout, Upper Columbia/Priest Rapids and the Columbia River corridor. Critical habitat borders on or passes through the following counties in Oregon: Clatsop, Columbia, Crook, Gilliam, Grant, Hood River, Jefferson, Morrow, Multnomah, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler; and the following counties in Washington: Benton, Clark, Cowlitz, Columbia, Franklin, King, Kittitas, Klickitat, Lewis, Pacific, Pierce, Skamania, Wahkiakum, Walla Walla, and Yakima.

Table 2. Primary constituent elements (PCEs) of critical habitat designated for Middle Columbia River Steelhead, and corresponding species life history events.

Primary Constituent Elements		**Species Life History Event**
Site Type	**Site Attribute**	
Freshwater spawning	Substrate Water quality Water quantity	Adult spawning Embryo incubation Alevin development
Freshwater rearing	Floodplain connectivity Forage Natural cover Water quality Water quantity	Fry emergence Fry/parr growth and development
Freshwater migration	Free of artificial obstructions Natural cover Water quality Water quantity	Adult sexual maturation Adult upstream migration, holding Kelt (steelhead) seaward migration Fry/parr seaward migration
Estuarine areas	Forage Free of obstruction Natural cover Salinity Water quality Water quantity	Adult sexual maturation Adult “reverse smoltification” Adult upstream migration, holding Kelt (steelhead) seaward migration Fry/parr seaward migration Fry/parr smoltification Smolt growth and development Smolt seaward migration
Nearshore marine areas	Forage Free of obstruction Natural cover Water quantity Water quality	Adult sexual maturation Smolt/adult transition
Offshore marine areas	Forage Water quality	Adult growth and development

3.3.2. Bull Trout

Bull trout critical habitat was designated in 2005. The USFWS revised the designation in 2010. A final rule was published on October 18, 2010, and took effect on November 17, 2010. A total of 19,729 miles of stream and 488,251 acres of reservoirs and lakes are designated as bull trout critical habitat. The Walla Walla River, which encompasses the project area, is designated as bull trout critical habitat.

Based on the needs identified in 50 CFR 17 (75 FR 63898) and the current knowledge of the life-history, biology, and ecology of the species and the characteristics of the habitat necessary to sustain the essential life history functions of the species, the USFWS has identified PCEs for bull trout critical habitat (Table 3).

Table 3. Primary constituent elements (PCEs) of critical habitats designated for bull trout.

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 nonnnative 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 Effects of the Action

This section includes an analysis of general project-related effects of the proposed action, as well as specific effects on the species and critical habitat PCEs. Effects from any interrelated and interdependent activities are also discussed.

The primary effect to listed species would come from the repair of the concrete spillway, installation of gabion structures, placement of shotcrete, and installation of riprap. Effects of these actions would be minimized by diverting water from the work site to the fish ladder during construction to reduce sediment and maintain fish passage. Construction is expected to require 3 to 4 weeks. All work will be completed during the in-water work window when few, if any, listed salmonids would be in the project area. Long-term impacts include the conversion of marginal cobble/boulder habitat with a homogonous gabion/shotcrete structure. While this structure does not provide quality fish habitat, it does maintain fish passage and eliminates current fish salvage concerns at the base of the current spillway.

4.1 Effects on Listed Species

The Corps anticipates that project-related effects will be similar for both the Middle Columbia River steelhead and the bull trout, and will, therefore, be analyzed collectively.

4.1.1 Sedimentation and Turbidity

The disturbance of stream habitats and placement of a gabion structure during rehab work has the potential to increase sediment inputs to the river system during low summer flows and may increase turbidity downstream from the project site for a short distance and for a short period of time. However, water diversion by the water control district, prior to the proposed action, will minimize sediment movement. Most of the work will be completed in the dry. *Because project repairs are short-term and scheduled during the in-water work window, and because water levels will be low, water will be diverted from the project site, and listed salmonids are not expected to be in the action area, effects from sediment disturbance are* ***"not likely to adversely affect"*** *listed fish species.*

4.1.2 Habitat Alterations

The installation of gabion structures, placement of shotcrete, and installation of rip rap would alter habitat at the Nursery Bridge drop structure creating a more homogenous stream bed. Gabion matting will essentially blanket the stream bed for approximately 27 feet downstream from the drop structure, covering approximately 3,500 square feet of stream channel. Existing stream bed material is primarily cobble/boulder material that was scoured from the last structure repair (Figure 2). Listed fish may use this section of stream habitat during high water for migration. However, the habitat is not conducive for spawning and fish have been trapped below the end sill as water recedes. *Because alterations will not occur in high quality fish habitat and will not take place near the fish ladder, where the majority of upstream fish migration occurs, and because downstream fish movement would continue unimpeded, effects from these alterations are* ***"not likely to adversely affect"*** *listed fish species.*

4.2 Effects on Critical Habitat

4.2.1 Middle Columbia Steelhead

Effects to PCEs for Middle Columbia River steelhead are shown in table 4. Because the proposed action occurs immediately below the Nursery Bridge drop structure it does not impact some of the PCEs for listed species. Specifically, estuarine areas, nearshore marine areas, and offshore marine areas are not within the project area. Only those PCEs that may be affected will be discussed further.

4.2.1.1 Freshwater Spawning

The installation of gabion structures, placement of shotcrete, and installation of riprap will require the diversion of water above the Nursery Bridge drop structure and the disturbance of approximately 3,500 square feet of stream habitat below the drop structure. The area immediately adjacent to the current fish ladder will not be altered. These actions may disturb an unknown quantity of sediment and increase turbidity for a limited time. However, the timing of the proposed project will not impact steelhead spawning as this species spawns and emerges from redds in the spring, before in-channel construction work will commence. In addition, water diversion to the east fish ladder will allow most work to occur in the dry. Turbidity effects anticipated from the project are expected to be localized and short term. *Because rehabilitation work will be conducted during the in-water work window when steelhead are not using the area for spawning, and because the proposed action will be completed in the dry,* ***effects to freshwater spawning are expected to be insignificant.***

4.2.1.2 Freshwater Rearing

Steelhead have been documented rearing in and near the action area. The installation of gabion matting, placement of shotcrete, and installation of riprap will require the diversion of water above the Nursery Bridge drop structure and the disturbance of approximately 3,500 square feet of stream habitat below the drop structure. These activities may disturb sediment, increase turbidity, and have a short term effect on water quality. In addition, a small area of substrate will be lost to macro-invertebrate production for a short period of time due to the placement of diversion dams and gabion structures.

Negative effects of these actions may include the short-term loss of macro-invertebrates at the project site and for a short distance downstream. Turbidity may result in the short-term displacement of fish downstream from the drop structure and the loss of 3,500 square feet of stream habitat. To minimize these effects, rehabilitation activities will be conducted during summer months when few, if any, listed fish are expected in the project area. During this time, water levels will be low, the project area would be in the dry, and sediment transport would be negligible. Installation effects are expected to be short-term and localized. ***Consequently, effects to freshwater rearing habitat are expected to be insignificant.***

Table 4. Effects of the proposed action to PCEs of critical habitats for Middle Columbia River Steelhead, and corresponding species life history events.

Primary Constituent Elements		Effects of Proposed Action
Site Type	**Site Attribute**	
Freshwater spawning	Substrate Water quality Water quantity	May Affect – Not Likely to Adversely Affect May Affect – Not Likely to Adversely Affect No Effect
Freshwater rearing	Floodplain connectivity Forage Natural cover Water quality Water quantity	No Effect May Affect – Not Likely to Adversely Affect May Affect – Not Likely to Adversely Affect May Affect – Not Likely to Adversely Affect No Effect
Freshwater migration	Free of artificial obstructions Natural cover Water quality Water quantity	May Affect – Not Likely to Adversely Affect May Affect – Not Likely to Adversely Affect May Affect – Not Likely to Adversely Affect No Effect
Estuarine areas	Forage Free of obstruction Natural cover Salinity Water quality Water quantity	No Effect
Nearshore marine areas	Forage Free of obstruction Natural cover Water quantity Water quality	No Effect
Offshore marine areas	Forage Water quality	No Effect

4.2.1.3 Freshwater Migration

Middle Columbia River steelhead use the project area for adult and juvenile migration. Rehabilitation work may disturb sediments at the project site and for a short distance downstream, and may have a short term effect on water quality and aquatic organisms that provide forage for steelhead. The installation of gabion structures will convert approximately 3,500 square feet of cobble/boulder habitat to homogeneous gabion matting.

To minimize effects to freshwater migration, the proposed action will be conducted during the summer in-water work window outside peak migration times for listed salmonids. During this time water flows are low and sediment transport negligible. In addition, structure design allows for fish escapement to the east low flow channel and into the east fish ladder and should prevent entrainment of fish in the structure. *Consequently, effects from the proposed action* ***may affect, but are not likely to adversely affect freshwater migration habitat of middle Columbia River steelhead.***

4.2.2 Bull Trout

Effects to PCEs for bull trout are discussed below. Because the project will have no effect on water temperature, water quantity, stream flow, and non-native species they will not be discussed further (Table 5).

4.2.2.1 Water Quality

The placement of gabion structures and diversion of water from the construction area may disturb sediments at the project site and may have a negative effect on water quality. However these actions are not expected to alter hyporehic or spring flows. In addition, effects are expected to be short term and would occur during the summer in-water work window when water flows are low, sediment transport is minimized, and bull trout are not present. ***Therefore, effects to water quality are considered discountable.***

4.2.2.2 Migration Corridors

The proposed action will alter the stream channel directly below the Nursery Bridge diversion structure. Approximately 3,500 square feet of cobble/boulder habitat will be converted to homogeneous gabion habitat. Roughness and hiding cover will be reduced. No change is anticipated to the low flow channel that provides access to the east fish ladder.

The current stream habitat is marginal and does not provide quality migration habitat. In addition, the current damaged condition of drop structure does not allow for successful migration of listed species, but actually acts as a trap requiring the salvage of listed species as waters recede. The proposed action will eliminate the need for fish salvage below the west end of the drop structure, and the lower elevation of the gabion structure will provide for easier access to the fish ladder. In addition, the gabion structure is designed to provide for a safe exit of fish from the structure into the low flow channel that provides access to the fish ladder. ***Consequently, effects to migration are considered insignificant.***

4.2.2.3 Food Availability

The proposed action may disturb sediments and reduce macro-invertebrate numbers at the construction site and for a short distance downstream. Approximately 3,500 square feet of boulder and cobble habitat will be converted to gabion matting with a concrete surface. These effects are expected to be short term and localized. Re-colonization of surrounding habitats by macro-invertebrates is expected following re-watering of the channel and long term impacts will affect a relatively small area of poor cobble, boulder habitat. ***Consequently, effects to food availability are considered insignificant .***

4.2.2.4 Instream Habitat

The proposed action will disturb sediments and convert approximately 3,500 square feet of cobble and boulder habitat to gabion matting with concrete surfaces. Roughness will be reduced and hiding cover eliminated.

The current habitat is dry for much of the year and is poor quality habitat when it does have water. There is no woody debris, no overhanging banks, and very little hiding cover. In addition, bull trout use the project site primarily for migration. ***Consequently, effects to instream habitat are considered insignificant.***

4.2.2.5 Substrate Characteristics

This PCE specifically addresses the effects to substrate in spawning and rearing habitats. ***Because the proposed action will not occur in bull trout spawning or rearing habitat there will be no effect to substrate characteristics.***

Table 5. Effects of the proposed action to the PCEs of critical habitats designated for bull trout.

PCEs		
1	Water Quality	May affect – not likely to adversely affect
2	Migration Habitat	May affect – not likely to adversely affect
3	Food Availability	May affect – not likely to adversely affect
4	Instream Habitat	May affect – not likely to adversely affect
5	Water Temperature	No effect
6	Substrate Characteristics	No effect
7	Stream Flow	No effect
8	Water Quantity	No effect
9	Nonnative Species	No Effect

4.3 Cumulative Effects

Major effects to fish and wildlife habitat near the action area are primarily the result of water diversion and water control activities. The Nursery Bridge control structure was created to protect the Eastside Road and a railroad line, and to support the diversion of water for agricultural purposes. Fish ladders to aid fish passage were constructed later. Ongoing activities at the site include: operation and maintenance of the drop structure, operation and maintenance of both fish ladders, maintenance of local levees, and yearly water diversion for summer agriculture uses.

The negative effects caused by the proposed action will be minor and insignificant. The installation of gabion structures will disturb sediment and may increase turbidity for a short period of time. These disturbances will occur during the in-water work window when few listed fish are expected in the project area and when water levels are low. In addition, the proposed action will convert about 3,500 square feet of poor quality stream habitat to homogonous gabion structures. The area of substrate temporarily lost to macro-invertebrates would be re-colonized within a few weeks.

Beneficial effects of the proposed action include a more stabilized stream channel and additional protection for the existing drop structure. Major actions that may impact the action area include the current proposed project and a levee repair project being carried out by the water control district that will repair 3,000 feet of the toe of the east levee starting immediately downstream from the east fish ladder. Levee repair will also be conducted in summer 2014.

4.4 Effects Determination

4.4.1 Listed Species

The effects of the action will include minor and temporary increases in turbidity and sediment transport during drop structure rehabilitation, and the conversion of stream habitat from cobble/boulder to homogeneous gabion matting. Although sediment effects can be harmful to ESA-listed fish species, they will be limited in intensity, extent, and duration, and will occur in the in-water work window when few, or no, listed salmonids will be in the project area. The Corps has determined that the proposed action ***may affect, but is not likely to adversely affect*** Middle Columbia River steelhead and bull trout. The project would have no effect on Washington ground squirrel. Effects to listed species and critical habitat are summarized in table 6.

4.4.2 Critical Habitat

The effects of the proposed action on PCEs for Middle Columbia River steelhead are insignificant or discountable because the action will occur during the summer in-water work window when work will be done in the dry and impacts will be minimized. In addition, changes in habitat will stabilize the area without obstructing steelhead migration or movement. Consequently, the Corps has determined the proposed project is ***not likely to adversely affect steelhead critical habitat.***

Similarly, because of the limits on the intensity, extent and duration of the adverse effects on the environment, the PCEs of the bull trout critical habitat in the action area are likely to remain functional and serve the intended conservation role for the species. Therefore, the Corps has determined that the proposed action is ***not likely to adversely affect bull trout critical habitat.***

Table 6. Effect determinations for listed species that may occur in the project area.

Species	Species Determination	Critical Habitat Determination
NMFS		
Middle Columbia River Steelhead	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
USFWS		
Bull trout	May Affect, Not Likely to Adversely Affect	Not Likely to Adversely Affect
Washington Ground Squirrel	No Effect	NA

5 Magnuson-Stevens Act - Essential Fish Habitat

The consultation requirement of section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) directs Federal agencies to consult with NMFS on all actions, or proposed actions that may adversely affect Essential Fish Habitat (EFH). Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other

ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

The project area is located in the Walla Walla River Hydrologic Unit Code (HUC 17070102) and has been identified as EFH for Chinook salmon.

Based on information provided above, and the analysis of effects presented in the ESA portion of this document, the proposed action may result in short-term adverse effects on some habitat parameters. These adverse effects include: short term increases in turbidity and suspended sediments during gabion installation. Long-term effects include the conversion of approximately 3,500 square feet of existing cobble/boulder habitat to homogeneous gabion structures. ***Consequently, the proposed action represents and adverse modification the EFH for Chinook salmon in the Walla Walla River. However, this modification occurs in habitat that is currently highly disturbed and for a species that was once extirpated from this drainage and is now reintroduced. In addition, the proposed action is designed to improve fish passage.***

6 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 be conducted during the late summer months outside the nesting season for migratory birds. Approximately 1,000 square feet of shrub habitat will be removed to make room for gabion structures and rip rap. Migratory birds would likely avoid the work area while work is being performed. ***Because the work will be conducted outside the nesting season there would be no take of migratory birds as a result of the proposed action.***

7 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) authorizes the USFWS to evaluate the impacts to fish and wildlife species from proposed Federal water resource development projects that could result in the control or modification of a natural stream or body of water that might have effects on the fish and wildlife resources that depend on that body of water or its associated habitats. ***The proposed action is considered a repair to an existing grade control structure which does not modify a natural body of water, and therefore does not involve activities subject to the FWCA.***

8 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions, primarily for Native American

Tribes. Take under the BGEPA includes both direct taking of individuals and take due to disturbance. Disturbance is further defined in 50 CFR 22.3.

Bald eagles are known to nest throughout Corps managed lands in the Walla Walla District. While all nest sites have not been documented in the District, locations of some are known. Bald eagles can generally be found in the region during the winter months. They can often be found roosting and hunting along the Columbia River. 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. There are no known bald or golden eagles nests at the project site.

The proposed action will not occur during eagle nesting season. Roosting or foraging eagles are not expected to occur in the project area during the proposed action. Construction activities are not expected to adversely affect eagles or cause delay in forage activities. In addition, suitable foraging habitat is not available at the project site. ***Because the proposed action will take place when eagles are not nesting and because there are ample alternative roosting or foraging sites outside the project area, the Corps believes there will be no disturbance or take of eagles as a result of the proposed action.***

9 References

Anglin, D. R., D. Gallion, M. G. Barrows, S. L. Haeseker, R. C. Koch, and C. N. 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.

Busby, P. J., T. C. Wainwright, G. J. Bryant, L. J. Lierheimer, R. S. Waples, F. W. Waknitz, and I. V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. NOAA Tech. Memo. NMFS-NWFSC-27, 261 p. Natl. Mar. Fish. Serv., Northwest Fisheries Science Center, Coastal Zone and Estuarine Studies Division, 2725 Montlake Blvd. E., Seattle, WA 98112-2097.

Mahoney B. D., G. Mendel, M. Lambert, J. Trump, P. Bronson, M. Gembala and M. Gallinat. 2009. Walla Walla Subbasin Collaborative Salmonid Monitoring and Evaluation Project: 2007 and 2008 Annual Report. Confederated Tribes of the Umatilla Indian Reservation and Washington Department of Fish and Wildlife, Report submitted to Bonneville Power Administration, Project No. 2000-039-00.

Mahoney B. D., G. Mendel, R. Weldert, J. Trump, J. Pomraning, M. Gembala and M. Gallinat. 2011. Walla Walla Subbasin Monitoring and Evaluation Project: 2009 and 2010 Annual Report. Confederated Tribes of the Umatilla Indian Reservation and Washington Department of Fish and Wildlife, Report submitted to Bonneville Power Administration, Project No. 2000-039-00.

NMFS (National Marine Fisheries Service). 2009. Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan. Northwest Regional Office, Seattle, Washington.

ODFW. 2005. Oregon Native Fish Status Report. Oregon Department of Fish & Wildlife, Fish Division, Salem, Oregon.

APPENDIX A

ESA Listed Species

U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

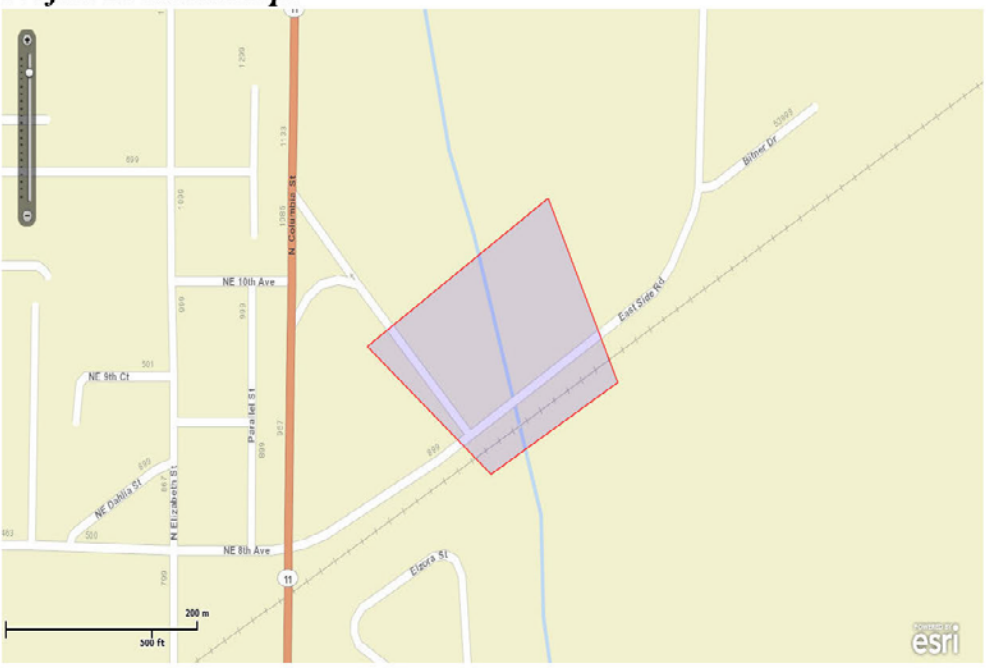
Oregon Fish and Wildlife Office
2600 SOUTHEAST 98TH AVENUE, SUITE 100
PORTLAND, OR 97266
(503) 231-6179
http://www.fws.gov/oregonfwo/Species/Lists/RequestList.asp

Project Name:
Nursery Bridge

U.S. Fish and Wildlife Service

Natural Resources of Concern

Project Location Map:



Project Counties:

Umatilla, OR

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-118.3831216 45.9451136, -118.384836 45.9444272, -118.3865097 45.9453821, -118.3840636 45.9464892, -118.3831216 45.9451136)))

Project Type:

Stream / Waterbody / Canals / Levees / Dikes

U.S. Fish and Wildlife Service

Natural Resources of Concern

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of **3** threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Fishes	Status		Has Critical Habitat	Contact
Bull Trout (*Salvelinus confluentus*) Population: U.S.A., conterminous, lower 48 states	Threatened	species info	Final designated critical habitat	Oregon Fish And Wildlife Office
Mammals				
Gray wolf (*Canis lupus*) Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, KS, KY, LA, MA, MD, ME, MO, MS, NC, NE, NH, NJ, NV, NY, OK, PA, RI, SC, TN, VA, VT and WV; those portions of AZ, NM, and TX not included in an experimental population; and portions of IA, IN, IL, ND, OH, OR, SD, UT, and WA. Mexico.	Endangered	species info		Oregon Fish And Wildlife Office
Washington ground squirrel (*Urocitellus washingtoni*)	Candidate	species info		Oregon Fish And Wildlife Office

Critical habitats within your project area: (View all critical habitats within your project area on one map)

The following critical habitats lie fully or partially within your project area.

Fishes	Critical Habitat Type
Bull Trout (*Salvelinus confluentus*) Population: U.S.A., conterminous, lower 48 states	Final designated critical habitat
steelhead (*Oncorhynchus (=salmo) mykiss*) Population: middle Columbia R.	Final designated critical habitat

U.S. Fish and Wildlife Service

Natural Resources of Concern

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are no refuges found within the vicinity of your project.

FWS Migratory Birds (USFWS Migratory Bird Program).

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668). The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

Migratory bird information is not available for your project location.

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

The following wetlands intersect your project area:

Wetland Types	NWI Classification Code	Approximate Acres
Freshwater Forested/Shrub Wetland	PSSC	4.742071
Riverine	R3USC	78.492697
Freshwater Forested/Shrub Wetland	PSSC	0.895564

APPENDIX B

NMFS Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation, Repair of the Nursery Bridge Drop Structure, Milton-Freewater, Umatilla County, Oregon. NMFS Consultation Number: NWR-2014-594

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, Washington 98115

NMFS Tracking Number:
NWR-2014-594

April 10, 2014

Michael S. Francis
Chief, Environmental Compliance Section
Walla Walla District, Corps of Engineers
201 North Third Avenue
Walla Walla, Washington 99362-1876

Re: Endangered Species Act Section 7 formal consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Repair of the Nursery Bridge Drop Structure on the Walla Walla River (6th Field HUC 170701020704 Garrison Creek-Walla Walla River) in Milton-Freewater, Umatilla County, Oregon.

Dear Mr. Francis:

The enclosed document contains a biological opinion prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA)on the effects of a bridge replacement. In this biological opinion, NMFS concludes that the proposed action, as proposed, is not likely to jeopardize the continued existence of ESA listed Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss),* or result in the destruction or adverse modification of their designated critical habitats.

As required by section 7 of the ESA, NMFS provided an incidental take statement (ITS) with the biological opinion. The ITS describes reasonable and prudent measures (RPMs) that NMFS considers necessary or appropriate to minimize incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the Federal agency and any person who performs the action must comply with to carry out the RPM. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes one conservation recommendation to avoid, minimize, or otherwise offset potential adverse effects to EFH. This conservation recommendation is identical to the ESA Terms and Conditions. Section 305(b)(4)(B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH conservation recommendations, the Walla Walla District of the Corps of Engineers must explain why, including the justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of conservation recommendations accepted.

If you have any questions, please contact Diane Driscoll of the Columbia Basin Branch at (509) 962-8911 or electronic mail at diane.driscoll@noaa.gov.

Sincerely,

for William W. Stelle, Jr.
Regional Administrator

Cc: Charles Chamberlain, Corps
Diane Driscoll, NMFS

Bcc: WCR – PDF (Chron)
WCR – PDF (Driscoll)
WCR – PDF (Bambrick)
WCR – File Copy

Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Repair of the Nursery Bridge Drop Structure, Milton-Freewater, Umatilla County, Oregon

Sixth Field Hydrologic Unit Code:
(Garrison Creek – Walla Walla River 170701020704)

NMFS Consultation Number: NWR-2014-594

Action Agency: U.S. Army Corps of Engineers, Walla Walla District

Affected Species and Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely to Jeopardize the Species?	Is Action Likely to Destroy or Adversely Modify Critical Habitat?
Middle Columbia River Steelhead	Threatened	Yes	No	No

Fishery Management Plan that Describes EFH in the Project Area	Does action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

Consultation Conducted By: National Marine Fisheries Service
West Coast Region

Issued by:

for William W. Stelle, Jr.
Regional Administrator

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ACRONYM GLOSSARY

BA	Biological Assessment
BMP	Best Management Practice
CFR	Code of Federal Regulations
CHART	Critical Habitat Analytical Review Team
Corps	U.S. Army Corps of Engineers
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FR	Federal Register
HBDIC	Hudson Bay District Improvement Company
HUC	Hydrologic Unit Code
ICTRT	Interior Columbia Basin Technical Recovery Team
ITS	Incidental Take Statement
LWD	Large Woody Debris
MCR	Middle Columbia River
MFWCD	Milton-Freewater Water Control District
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MPG	Major Population Grou[
MSA	Major Spawning Area
NMFS	National Marine Fisheries Service
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
OHWM	Ordinary High Water Mark
Opinion	Biological Opinion
PCE	Primary Constituent Element
PFMC	Pacific Fishery Management Council
RPM	Reasonable Prudent Measures
RM	River Mile
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VSP	Viable Salmonid Population
WWBWC	Walla Walla Basin Watershed Council

1.0 INTRODUCTION

This introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

The biological opinion (opinion) and incidental take statement (ITS) portions of this document were prepared by the National Marine Fisheries Service (NMFS) in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, et seq.), and implementing regulations at 50 CFR 402.

NMFS also completed an Essential Fish Habitat (EFH) consultation. It was prepared in accordance with Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

The opinion and EFH conservation recommendations each comply with section 515 of the Treasury and General Government Appropriations Act of 2001 (Data Quality Act) (44 U.S.C. 3504(d)(1) et seq.), and underwent pre-dissemination review. The administrative record for this consultation is on file at the Ellensburg, Washington field office.

1.2 Consultation History

On March 24, 2014, NMFS received a letter from the Walla Walla District of the U.S. Army Corps of Engineers (Corps) requesting informal consultation pursuant to section 7(a)(2) of the ESA, and EFH consultation pursuant to section 305(b)(2) of the MSA, for repair of the Nursery Bridge drop structure at river mile (RM) 46 on the Walla Walla River in the town of Milton-Freewater, Umatilla County, Oregon. The proposed project lies within the range and habitats of Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) listed as threatened under the ESA and because the project will receive funding from the Corps, a federal nexus is formed under Section 7 of the ESA. In their biological assessment (BA), the Corps determined the proposed action was not likely to adversely affect MCR steelhead. The Corps also determined the proposed action was not likely to adversely affect designated critical habitat of MCR steelhead and would not have an adverse effect on EFH for Chinook salmon (*O. tshawytscha).* Because of the potential need to handle fish when isolating the worksite, NMFS did not agree with the Corps determination that the action would not adversely affect MCR steelhead and instead proceeded to formal consultation with a “may affect, likely to adversely affect” effects determination. NMFS did agree with the Corps determination that the proposed action is not likely to destroy or adversely modify critical habitat.

The biological opinion (opinion) and ITS portions of this document were prepared by NMFS in accordance with section 7(b) of the ESA of 1973, as amended (16 U.S.C. 1531, et seq.), and implementing regulations at 50 CFR 402. This biological opinion is based on information provided in the BA, information obtained from the Oregon Department of Fish and Wildlife

(ODFW), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), field investigations, and other sources of information. The consultation also included telephone conversations and electronic mail between NMFS and Corps. A complete record of this consultation is on file at the Ellensburg, Washington office.

NMFS also completed an EFH consultation. It was prepared in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, et seq.) and implementing regulations at 50 CFR 600. The opinion and EFH conservation recommendations are both in compliance with the Data Quality Act (DQA) (44 U.S.C. 3504(d)(1) et seq.) and they underwent pre-dissemination review.

1.3 Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those without independent utility apart from the action under consideration.

The U.S. Army Corps of Engineers, Walla Walla District (Corps), proposes to repair the Nursery Bridge drop structure in Milton-Freewater, Oregon. In 2012, the Milton-Freewater Water Control District (MFWCD), the entity responsible for the operation and maintenance of the levees and the drop structure, made extensive repairs to the drop structure, including placing riprap immediately downstream of the end sill. On April 20, 2013, high flows displaced much of the riprap exposing the end sill to a depth of approximately six feet and eroded the concrete toe of the spillway. Erosion along the toe of the spillway has exposed rebar and removed a section of concrete about 16 inches long and 7 inches deep. There is also damage to the one-to-one concrete slope.

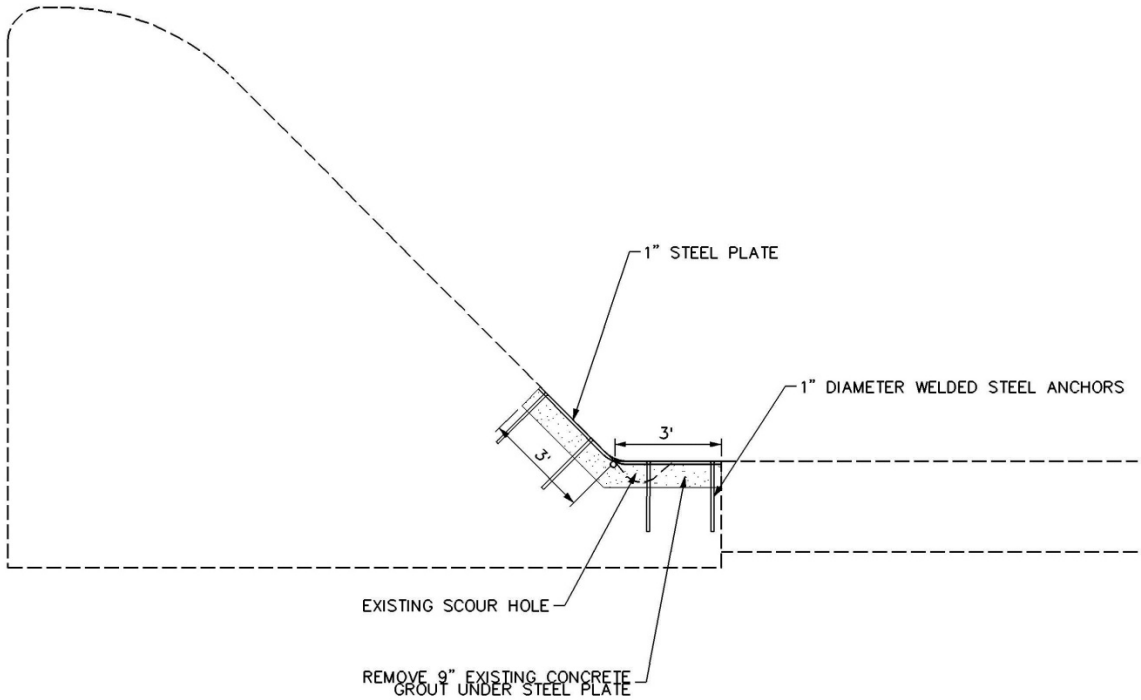
Under Public Law (PL) 84-99, the Corps is authorized to undertake activities including disaster preparedness, emergency operations (Flood Response and Post Flood Response), and rehabilitation of flood control works threatened or destroyed by flood. Under PL 84-99, the Corps can restore eligible flood protection systems, in this case the Nursery Bridge drop structure, to its pre-disaster status. The proposed repair is divided into two sections; concrete repair at the toe of the spillway, and riprap replacement at the end sill.

Water Diversion: A small push-up dam using materials already accumulated in the stilling basin will divert any water through the east fish ladder away from the proposed action. Fish passage through the east fish ladder will be maintained. Subsurface flows will be pumped from the work site.

Concrete Repair: Further erosion of the spillway could eventually breach the concrete and jeopardize the drop structure, fish ladder, diversion head-gate, and both upstream bridges. The Corps will protect the structure by grouting damaged areas of the spillway and armoring the base of the spillway with a steel plate. The Corps will anchor the steel plate to the bottom of the stilling basin and will protect approximately 3 feet of the base of the structure and 3 feet of the

slope. The plate will be recessed and grouted to provide a smooth transition to the existing structure (Figure 1).

Figure 1. Plan view of spillway toe showing proposed repairs



Riprap Repair: Several previous installations of riprap to protect the drop structure have failed. To prevent similar failures the Corps will install a gabion structure to stabilize the stream channel immediately downstream from the end sill. The gabion apron will extend out from the end sill of the drop structure approximately 27 feet, and arranged into an extended stilling basin and covered with shotcrete to avoid trapping fish (Figures 2 and 3).

The Corp will level the area below the stilling basin and place gabion baskets below the streambed elevation to form a foundation upon which to construct the gabion mattress. A mattress of gabion baskets 1.5 feet thick will be placed on this foundation and additional levels of gabion baskets will be placed on the mattress to step up to the concrete stilling basin. A final layer of gabion baskets placed near the downstream end of the gabion structure will form an end sill (Figure 2). The gabion mattress will be set approximately 7 feet below the lip of the existing stilling basin level with the low flow apron of the fish ladder on the east bank, and will allow fish to exit the gabion-stilling basin into the low flow channel near the fish ladder. Riprap will be placed below the gabion structure to provide additional protection. Heavy equipment used during rehab may include excavators, cranes, trackhoes, skid steers, and bulldozers.

Figure 2. Aerial view of plans showing the installation of a gabion apron to stabilize the stream channel below the end sill of the drop structure (BA).

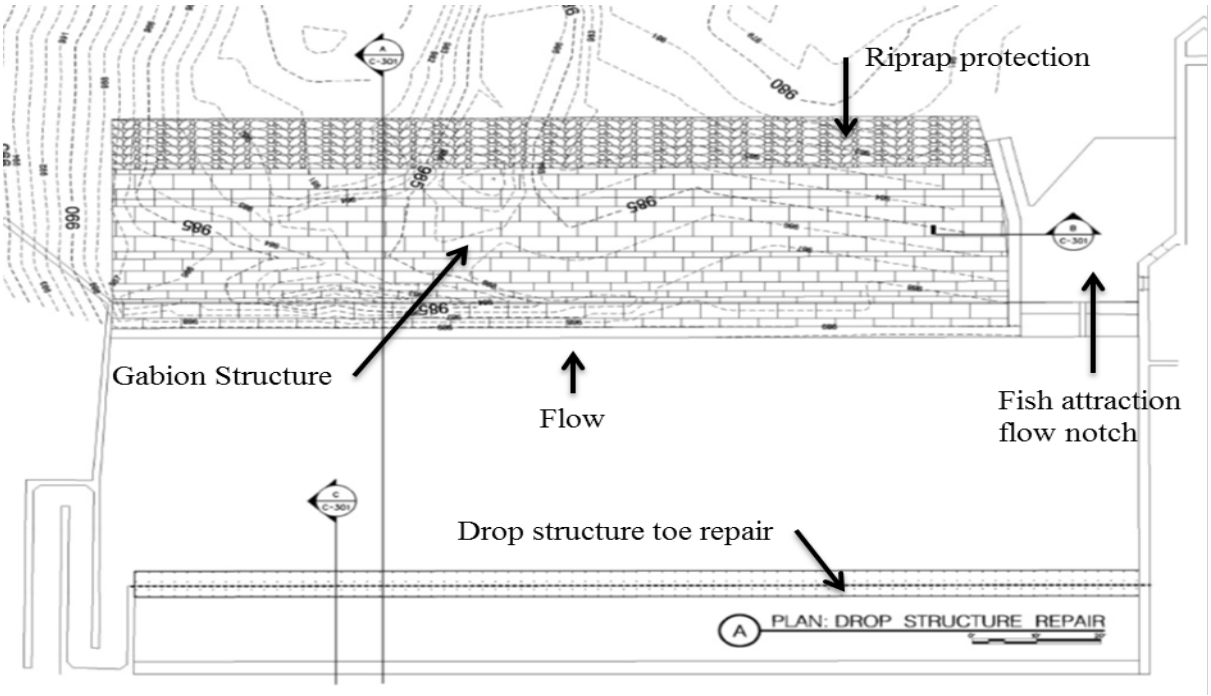
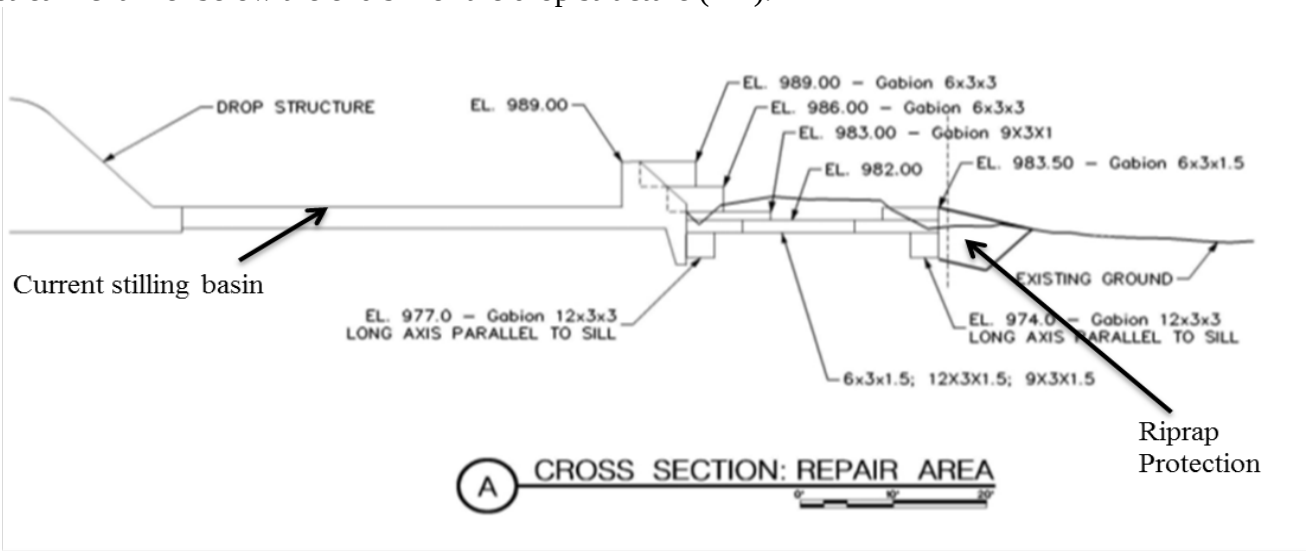


Figure 3. Cross section view of plans showing installation of a gabion apron to stabilize the stream channel below the end sill of the drop structure (BA).



1.4 Action Area

"Action area" means all areas affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For purposes of this consultation, the action area is the Walla Walla River from 300 feet downstream of the Nursery Bridge drop structure to approximately 150 feet upstream of the fishway exit (RM 44.6)

This area is part of the major spawning area (MSA) designated in recovery planning for the Walla Walla River Subbasin. This reach of the Walla Walla River provides some spawning habitat and also serves as juvenile rearing habitat and an important migration corridor to high quality habitat upstream for juveniles and adults of the Walla Walla River population of MCR steelhead, a genetically distinct population within the MCR steelhead DPS (ICTRT 2003).

In the action area, MCR steelhead use the Walla Walla River primarily for rearing and migration. Largely because of irrigation withdrawals, associated low-flows, and high temperatures during the summer, the limited rearing habitat in the action area is found in isolated pockets where cool groundwater enters the channel. Depending on the snowpack and spring runoff, low flows and high temperatures can create a thermal barrier that restricts MCR steelhead use of the river downstream of RM 33.5 (Mill Creek) beginning as early as May and continuing as late as October or November (Northwest Power and Conservation Council 2004) (NPCC 2004). The action area is in designated critical habitat for the MCR steelhead distinct population segment (DPS). The action area is also designated EFH for Chinook salmon (Pacific Fishery Management Council 1999).

2.0 ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with the United States Fish and Wildlife Service (USFWS), NMFS, or both, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitat. Section 7(b)(3) requires that at the conclusion of consultation, the Service provide an opinion stating how the agencies' actions will affect listed species or their critical habitat. If incidental take is expected, Section 7(b)(4) requires the provision of an ITS specifying the impact of any incidental taking, and including reasonable and prudent measures to minimize such impacts.

2.1 Analytical Approach of the Biological Opinion

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with NMFS, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. The jeopardy analysis considers both survival and recovery of the species. The adverse modification analysis considers the impacts to the conservation value of the designated critical habitat.

"To jeopardize the continued existence of a listed species" means to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

This opinion does not rely on the regulatory definition of 'destruction or adverse modification' of critical habitat at 50 C.F.R. 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat (Hogarth 2005). NMFS used the following approach to determine whether the proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

To complete the jeopardy analysis presented in this opinion, NMFS reviewed the rangewide status of each listed species of Pacific salmon and steelhead likely to be adversely affected by the proposed action, the environmental baseline in the action area, the effects of the action as proposed, and cumulative effects (50 CFR 402.14(g)). Added to the effects of the action are the environmental baseline and cumulative effects to assess whether the action could reasonably be expected to: appreciably reduce the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or distribution;

The adverse modification of critical habitat analysis includes a review of the status of critical habitat range wide, the role of the environmental baseline, and evaluation of the proposed actions effects on Primary Constituent Elements (PCEs) of critical habitat. The anticipated effects, together with the anticipated cumulative effects on PCES, are added to the baseline to determine if these would reduce the value of designated or proposed critical habitat necessary for the conservation of the species.

2.2 Rangewide Status of the Species and Critical Habitat

One factor affecting the status of MCR steelhead, and aquatic habitat at large is climate change. Several studies have revealed that climate change has the potential to affect ecosystems in nearly all tributaries throughout the state (Battin et al. 2007; ISAB 2007) While the intensity of effects will vary by region (ISAB 2007), climate change is generally expected to alter aquatic habitat (water yield, peak flows, and stream temperature). As climate change alters the structure and distribution of rainfall, snowpack, and glaciations, each factor will in turn alter riverine hydrographs. Given the increasing certainty that climate change is occurring and is accelerating (Battin et al. 2007; Intergovernmental Panel on Climate Change 2007), NMFS anticipates salmonid habitats will be affected. Climate and hydrology models project significant reductions in both total snow pack and low-elevation snow pack in the Pacific Northwest over the next 50 years (Mote and Salathé 2009) – changes that will shrink the extent of the snowmelt-dominated habitat available to salmon. Such changes may restrict our ability to conserve diverse salmon life histories.

In the northwest, most models project warmer air temperatures, increases in winter precipitation, and decreases in summer precipitation (Luce et al. 2013). According to model predictions, average temperatures in Washington State are likely to increase 0.1-0.6º C per decade (Mote and Salathé 2009). Warmer air temperatures will lead to more precipitation

falling as rain rather than snow. As the snow pack diminishes, seasonal hydrology will shift to more frequent and severe early large storms, changing stream flow timing and increasing peak river flows, which may limit salmon survival (Luce et al. 2013; Mantua et al. 2009). The largest driver of climate-induced decline in salmon populations is projected to be the impact of increased winter peak flows, which scour the streambed and destroy salmon eggs (Battin et al. 2007).

Higher water temperatures and lower spawning flows, together with increased magnitude of winter peak flows are all likely to increase salmon mortality. Higher ambient air temperatures will likely cause water temperatures to rise (ISAB 2007). Salmon and steelhead require cold water for spawning and incubation. As climate change progresses and stream temperatures warm, thermal refugia will be essential to persistence of many salmonid populations. Thermal refugia are important for providing salmon and steelhead with patches of suitable habitat while allowing them to undertake migrations through or to make foraging forays into areas with greater than optimal temperatures. As harmfully warm water temperatures occur more often and in more places, juvenile salmonids may increasingly rely on confluences of colder tributaries or other areas of cold-water refugia (Mantua et al. 2009). Higher water temperatures and lower spawning flows, together with increased peak flows are all likely to increase salmon mortality in the Walla Walla Basin and in hydrologically similar watersheds throughout the region. Such changes may hinder conserving diverse salmonid life histories, as the stream-type salmonid life history appears to be dependent on a diminishing habitat (Beechie et al. 2006). Recommendations to mitigate the adverse effects of climate change include restoring connections to historical floodplains and freshwater and estuarine habitats to provide fish refugia and areas to store excess floodwaters, protecting and restoring riparian vegetation to ameliorate stream temperature increases, and purchasing or applying easements to lands that provide important cold water or refuge habitat (Battin et al. 2007; ISAB 2007).

2.2.1 Status of the Species

When examining the status of a species, NMFS uses criteria that describe a ‘Viable Salmonid Population’ (VSP) (McElhany et al. 2000). Attributes associated with a VSP are the levels of abundance (number of adult spawners in natural production areas), productivity (adult progeny per parent), and the spatial structure and diversity necessary to: (1) safeguard the genetic diversity of the listed Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS), (2) enhance its capacity to adapt to various environmental conditions, and (3) allow it to become self-sustaining in the natural environment. In 2007, the Interior Columbia Basin Technical Recovery Team (ICTRT) further defined population-level viability criteria to address, in combination, all four of the key parameters: (1) abundance, (2) productivity, (3) spatial structure and (4) diversity (ICTRT 2007b).

Viability attributes are influenced by survival, behavior, and experiences throughout the entire life cycle, characteristics that are influenced in turn by habitat and other environmental conditions. For species with multiple populations, once the biological status of a species' populations has been determined, NMFS assesses the status of the entire species using criteria for groups of populations, as described in recovery plans and guidance documents from technical recovery teams. Considerations for species viability include having multiple populations that are viable, ensuring that populations with unique life histories and phenotypes are viable, and that

some viable populations are both widespread to avoid concurrent extinctions from mass catastrophes and spatially close to allow functioning as metapopulations (McElhany et al. 2000). The present risk faced by the ESU/DPS informs NMFS' determination of whether additional risk will appreciably reduce the likelihood that the ESU/DPS will survive or recover in the wild. The greater the present risk, the more likely any additional risk resulting from the proposed action's effects on the abundance (population size), productivity, distribution, or genetic diversity of the ESU/DPS will be an appreciable reduction (McElhany et al. 2000).

The summary that follows describes the status of MCR steelhead, and their designated critical habitats, that occur within the geographic area of this proposed action and are considered in this opinion. More detailed information on the status and trends of MCR steelhead, and their biology and ecology, are in the listing regulations and critical habitat designations published in the Federal Register.

Middle Columbia River Steelhead

The MCR steelhead DPS is comprised of 20 independent populations (17 extant) within four Major Population Groups (MPGs) in Washington and Oregon. The MCR steelhead (DPS) includes all naturally spawning populations of steelhead using tributaries upstream and exclusive of the Wind River, Washington, and the Hood River, Oregon, excluding the upper Columbia River tributaries (upstream of Priest Rapids Dam) and the Snake River. The MCR steelhead DPS was listed as threatened on March 25, 1999 (64 FR 14517) and its threatened status was reaffirmed on June 28, 2005 (70 FR 37160) and August 15, 2011 (76 FR 50448). NMFS has defined this DPS of steelhead to include only the anadromous members of this species (70 FR 67130). The 20 populations identified in this DPS are classified into four MPGs, the Eastern Cascades, the John Day River, the Umatilla Rivers/Walla Walla, and the Yakima River MPGs. There is one functionally extirpated[1] population, the White Salmon, access was reestablished in 2011, and two extinct[2] populations, the Crooked River populations in the Eastern Cascades MPG, and the Willow Creek population in the Umatilla Rivers/Walla Walla MPG.

Our approach to assessing the current status of the MCR steelhead DPS is based on evaluating information on the abundance and productivity (A/P), spatial structure, and genetic diversity of the anadromous component of this species (Ford 2011, 75 FR 13082). Many steelhead populations along the West Coast of North America co-occur with conspecific populations of resident rainbow trout. There may be situations where reproductive contributions from resident

[1] Extirpated: Locally extinct. Other populations of this species exist elsewhere. Functionally extirpated populations are those of which there are so few remaining numbers that there are not enough fish or habitat in suitable condition to support a fully functional population.
[2] Extinct: No longer in existence. No individuals of this species can be found.

rainbow trout may mitigate short-term extinction risk for some steelhead DPSs (Good et al. 2005 FR 67130). We assume that any benefits to an anadromous population resulting from the presence of a conspecific resident form will be reflected in direct measures of the current status of the anadromous form (Ford 2011).

Life History. Life history characteristics for MCR steelhead are similar to those of other inland steelhead DPSs. Most fish smolt at two years and spend one to two years in salt water before re-entering freshwater, where they may remain up to a year before spawning (Howell et al. 1985). All steelhead upstream of The Dalles Dam are summer-run (Reisenbichler et al. 1992) fish that enter the Columbia River from June to August. Adult steelhead ascend mainstem rivers and their tributaries throughout the winter, spawning in the late winter and early spring. Fry emergence typically occurs between May and mid-July and outmigration occurs primarily from February through June with a peak in most portions of the basin in April (NPCC 2004). Adults returning to spawn in the Walla Walla or Touchet Rivers remain near the mouth or in the Columbia River until late November or December when flows increase before moving upstream to spawning areas. Smolt migration and run timing for natural steelhead smolts occurred between January 1 and June 15; with peaks in February, April and May, most (86 percent) of the natural steelhead smolts reach the mouth of the Walla Walla River between April 1 and May 31 (Mahoney et al. 2008). Descriptions of the MPGs and their corresponding independent population groups, for this consultation that is the Umatilla/Walla Walla MPG and the Walla Walla River population, are summarized from information provided in the Recovery Plan (NMFS 2009; SRSRB 2007; 2011), the ICTRT reports (ICTRT 2003; 2005) and the Supplemental Federal Columbia River Power System (FCRPS) Biological Opinion (NMFS 2014).

Limiting Factors. Numerous factors across the range of the MCR steelhead DPS that led to its listing in 1999 continue to exert substantial influence on anadromous fish abundance and production. These factors include declines in abundance of naturally produced fish, heavy harvest pressures, significant habitat loss, losses associated with mainstem Columbia River hydropower projects, grazing, irrigation diversions, and pervasive hatchery impacts that affect the viability of steelhead populations (McClure et al. 2003). Limiting factors identified for MCR steelhead include: (1) Hydropower system mortality at mainstem Columbia River dams, (2) Reduced stream flow in tributaries, (3) Impaired passage in tributaries, (4) Excessive fine sediment in stream substrates, (5) Degraded water quality, and (6) Altered channel morphology (NMFS 2005a).

Abundance. Using data from 2002 to 2011 and 2002 to 2013, NMFS has developed recent 10-year geomean abundance estimates for 15 of the 17 extant MCR steelhead populations (NMFS 2014). Only two of the 15 populations are currently above the average abundance thresholds and meet the 95% confidence limits that the ICTRT identifies as a minimum for low risk. The remaining 13 populations are at moderate or high risk of extinction due to low abundance or lack of information (NMFS 2014; Ford 2011).

The 2010 status review (Ford 2011) characterized four MCR steelhead populations as being at high risk of extinction in terms of abundance and productivity based on 2000 to 20009 spawner numbers (Table 1). The Touchet River population is one of the high-risk populations while the

Umatilla and Walla Walla populations are at moderate risk relative to abundance and productivity.

Productivity. Based on 20 full brood-year returns of MCR steelhead for the 12 populations with sufficient data, most populations have replaced themselves, and a few have not when only natural production is considered. Relative population status varies widely across the DPS. Based on the most recent analysis (NMFS 2014) productivity is insufficient to meet recovery needs for most populations. Estimates of required productivity increases required to reach a low risk of extinction depend on assumptions regarding future hydropower operations and ocean conditions. Productivity estimates associated with the 2004 Federal Columbia River Power System (FCRPS) Biological Opinion are useful because the most recent FCRPS opinion (NMFS 2014) is expected to have similar effects as the 2004 version (Table 2). Improving hydropower survival levels anticipated by 2014 in the 2004 FCRPS Biological Opinion will improve productivity (ICTRT 2007a), but will not be sufficient by itself to meet viability criteria for some MCR steelhead populations, including all two of the Umatilla/Walla Walla MPG populations.

Table 1. Summary of the MCR steelhead population status and Interior Columbia Basin Technical Recovery Team (ICTRT) viability criteria (adapted from NMFS 2014; Ford 2011).

	Abundance and Productivity Metrics			
Population	Abundance Threshold	Natural Spawning Abundance 2002-2011[a] 2003-2011[b]	Productivity (returns-per-spawner) 2000-2009[c]	Integrated Abundance/ Productivity Risk[c]
Umatilla[a]	1500	2364	1.21	Moderate
Walla Walla[a]	1000	927	1.42	Moderate
Touchet[b]	1000	396	1.46	High

[a, b] FCRPS 2014 Table 2.1-10
[c] Ford 2011 Table 19

The ICTRT (2007a) assessed the difference between a listed species' or populations current status for abundance and productivity and the viability criteria. This difference, the change in survival rate needed to meet viability, is the "gap." Table 2 indicates the ICTRT calculated minimal survival rate changes for two of the three populations within the Umatilla/Walla Walla MPG to meet the abundance and productivity viability criteria for a 5 percent risk of extinction in a 100-year period.

Table 2. Productivity increases needed for viability (ICTRT 2007a) for Umatilla/Walla Walla MPG populations of Middle Columbia River Steelhead.

Population	Productivity increase needed to achieve 5% risk of extinction under relatively good (historical) ocean conditions[1]	Productivity increase needed to achieve 5% risk of extinction under poor ocean conditions[1]
Umatilla River	1.0%	12%
Walla Walla River	21%	37%
Touchet River	Insufficient data	Insufficient data

[1]Assumes that hydropower system and survival improvements anticipated by 2014 in the 2004 FCRPS Biological Opinion will be achieved.

Spatial Structure and Diversity. The MCR steelhead DPS is comprised of 20 independent populations (17 extant) within four MPGs in Washington and Oregon. This DPS includes all naturally spawned populations of steelhead (and their progeny) in streams from above the Wind River, Washington, and the Hood River, Oregon (exclusive), upstream to, and including, the Yakima River, Washington, excluding steelhead from the Snake River Basin. Seven artificial propagation programs are included in the DPS: the Touchet River Endemic, Yakima River Kelt Reconditioning Program (in Satus Creek, Toppenish Creek, Naches River, and Upper Yakima River), Umatilla River, and the Deschutes River steelhead hatchery programs. Major watersheds within this DPS include the White Salmon, Klickitat, Fifteen Mile, Deschutes, John Day, Umatilla, Yakima, and Walla Walla River Basins.

The ICTRT characterizes the spatial structure risk to MCR steelhead populations as very low-to-low for 14 of the 17 extant populations and moderate for three populations. Within the Umatilla/Walla Walla MPG, the Walla Walla River population is ranked at very low risk, the Touchet River population at low risk and the Umatilla River population is at moderate risk (Ford 2011 Table 19).

The MCR steelhead DPS addresses spatial structure criteria with multiple populations that are geographically dispersed (some widely, some close). The ICTRT identified two major spawning aggregations in both the Walla Walla River and its major tributary the Touchet River, plus two minor spawning aggregations in the Walla Walla River and one minor spawning aggregation in the Touchet River. In addition, the *O. mykiss* in the Walla Walla River watershed are genetically distinct from those in the Touchet River watershed (ICTRT 2003; Narum et al. 2004). Based on results of genetic testing, NMFS designated *O. mykiss* in the Walla Walla River and its tributaries, excluding the Touchet River, as an independent population and the *O. mykiss* in the Touchet River as another independent population (ICTRT 2003; Winans et al. 2004). The genetic distinction between the Walla Walla and the Touchet populations and the location of spawning aggregations are a consideration in the analysis of the effects of the proposed action.

Table 3. Summary of current spatial structure and genetic diversity viability status (adapted from Ford 2011)

	Spatial Structure and Diversity Metrics			
Population	Natural Process Risk	Diversity Risk	Integrated Spatial Structure/ Diversity Risk	Overall Viability Rating
Umatilla River	Moderate	Moderate	Moderate	Maintained
Walla Walla River	Very Low	Moderate	Moderate	Maintained
Touchet River	Low	Moderate	Moderate	Maintained[c]

[c] Ford 2011 Table 19. Overall viability ratings for the Touchet River population should be interpreted with caution because of limited data.

Although research has detected genetic diversity between the Walla Walla River and the Touchet River populations, it is unclear how changes in phenotypic characteristics, patterns of genetic variation, distribution across habitat types and selectivity of natural processes affect the risk of extinction. NMFS considers diversity at this time is very low, low, and moderate for the Walla Walla, Touchet, and Umatilla populations, respectively.

Salmonid Population Viability Summary. According to the 2010 status review (Ford 2011) and the ICTRT viability criteria, the majority of natural MCR steelhead DPS populations are rated at moderate risk for abundance and productivity, and low to moderate risk for spatial structure and diversity (Ford 2011 Tables 17 to 20). The MCR steelhead DPS includes one highly viable population (North Fork John Day), three viable populations , 10 maintained populations, and three at high risk of extinction within 100 years (Deschutes Westside, Upper Yakima Mainstem, Naches River, and Rock Creek). None of the four MPGs as a whole reaches low risk status according to the ICTRT's MPG-level criteria (NMFS 2014; Ford 2011).

Habitat loss within the MCR steelhead DPS has reduced spatial structure. The known extinction of three populations within the DPS represents a loss of 15 percent of the populations within the DPS. Local environmental variation and genetic diversity found in the subpopulations of the Walla Walla River subbasin represent important components for the future viability of the MCR steelhead DPS. The Walla Walla River subbasin is unique within the DPS because it supports two genetically distinct populations. These populations provide genetic diversity and spatial structure that support the potential viability of the DPS. Based on ICTRT viability criteria, to reduce the risk of extinction in the MPG to a low level, the Umatilla population and either the Walla Walla River or the Touchet River populations must meet or exceed viability criteria with the remaining population (either the Walla Walla River or the Touchet River) at the maintained level.

In order for the Umatilla/Walla Walla MPG to reach ICTRT viability goals, the number of returning spawners for each major or minor spawning aggregation in the MPG must reach or exceed ICTRT recovery goal numbers and maintain those levels of abundance for 10 to 12 years (two generations) and ICTRT productivity goals for 20 years in all spawning aggregations before the DPS, and specific to this discussion the Walla Walla River population, would be considered viable under the ICTRT abundance and intrinsic productivity recommendations.[3] For example,

[3] Email from Dr. McClure at the Northwest Fisheries Science Center, June 12, 2009.

the number of returning spawners in the Walla Walla River must increase to a minimum of 1,000 and maintain or exceed those numbers for at least 20 years to show a consistent trend to consider the Walla Walla River population viable. When the Walla Walla River and Umatilla River populations are viable, and the viability of the Touchet River population remains at maintained or better, the Umatilla/Walla Walla MPG will be viable.

The ICTRT DPS-level viability criterion states, "All extant MPGs and any extirpated MPGs critical for proper functioning of the ESU should be at low risk" (viable) (ICTRT, 2007). Thus, the Middle Columbia steelhead DPS does not currently meet viability criteria based on the determination that the four constituent MPGs are not at low risk.

Taken as a whole, the available data indicate that although short-term increases in abundance have been observed in some MPGs of the DPS, long-term productivity problems related to the failure of natural MCR steelhead stocks to replace themselves, known reduction in spatial structure, and likely loss of genetic diversity, are all contributing to hamper the attainment of viability for the entire DPS in the foreseeable future. The Umatilla /Walla Walla MPG does not meet viability criteria because the integrated abundance and productivity risk of the Umatilla and Walla Walla populations are considered moderate while the Touchet River risk is high, and all three populations integrated spatial structure and diversity risk is moderate. At the current time, all three populations have a 25% risk of extinction over the next 100 years. For the MPG to achieve viability, the Umatilla population and either the Walla Walla or the Touchet population risk must decline to 5% with the remaining population maintaining no more than 25% risk.

2.2.2 Status of Critical Habitat

This section examines the status of designated critical habitat affected by the proposed action by examining the condition and trends of essential physical and biological features throughout the designated areas. These features are essential to the conservation of the listed species because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration, and foraging).

Critical habitat for MCR steelhead was designated on September 2, 2005 (70 FR 52630). NMFS designated only those habitats presently occupied by a particular species and contained certain habitat attributes called "primary constituent elements" (PCEs) that are essential to support one or more of the life stages of salmon and steelhead (Table 2). Critical habitat includes the stream channels within the proposed stream reaches, and includes a lateral extent as defined by the ordinary high water mark (OHWM) (33 CFR 328.3). For salmon and steelhead, NMFS ranked watersheds within designated critical habitat at the scale of the fifth-field hydrologic unit code (HUC5) in terms of the conservation value they provide to each listed species they support. The conservation rankings are high, medium, or low. To determine the conservation value of each watershed to species viability, NMFS' critical habitat analytical review teams (CHARTs) evaluated the quantity and quality of habitat features (for example, spawning gravels, wood and water condition, and side channels), the relationship of the area compared to other areas within the species' range, and the significance to the species of the population occupying that area. Thus, even a location that has poor quality of habitat could be ranked with a high conservation value if it were essential due to factors such as limited availability (e.g., one of a very few spawning areas), a unique contribution of the population it served (e.g., a population at the

extreme end of geographic distribution), or the fact that it serves another important role (e.g., obligate area for migration to upstream spawning areas).

The physical or biological features of freshwater spawning and incubation sites include water flow, quality, temperature conditions, and suitable substrate for spawning and incubation, as well as migratory access for adults and juveniles (Table 4). These features are essential to conservation because without them the species cannot successfully spawn and produce offspring. The physical or biological features of freshwater migration corridors associated with spawning and incubation sites include water flow, quality and temperature conditions supporting larval and adult mobility, abundant prey items supporting larval feeding after yolk sac depletion, and free passage (no obstructions) for adults and juveniles. These features are essential to conservation because they allow adult fish to swim upstream to reach spawning areas and they allow larval fish to proceed downstream and reach the ocean.

Table 4. PCEs of critical habitats designated for ESA-listed salmon and steelhead species considered in this opinion.

Site Type	**Primary Constituent Elements (Essential Physical and Biological Features)**	**Species Life Stage**
Freshwater spawning	Substrate Water quality Water quantity	Adult spawning Embryo incubation Alevin growth and development
Freshwater rearing	Floodplain connectivity Forage Natural cover Water quality Water quantity	Fry emergence from gravel Fry/parr/smolt growth and development
Freshwater migration	Free of artificial obstruction Natural cover Water quality Water quantity	Adult sexual maturation Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration

Habitat quality in tributary streams in the Interior Columbia Recovery Domain range from excellent in wilderness and roadless areas to poor in areas subject to heavy agricultural and urban development (Corcoran et al. 2011a; NMFS 2005b; Wissmar et al. 1994). Intense agriculture that requires irrigation, alteration of stream morphology (i.e., channel modifications and diking), removal of riparian vegetation, wetland draining and conversion, livestock grazing, dredging, road construction and maintenance, logging, mining, and to a limited extent, urbanization have degraded critical habitat throughout much of the Interior Columbia Recovery Domain. Reduced summer stream flows, impaired water quality, and reduction of habitat complexity are common problems for critical habitat in developed areas.

The development and operation of hydroelectric dams have dramatically affected freshwater migration PCEs throughout the Columbia River basin. There are currently four hydroelectric dams in the mainstem Columbia River migration corridor downstream of the action area.

Although major efforts have been made to reduce juvenile mortality, the safe passage element of the migration PCE is severely impaired as significant numbers of smolts are killed or injured by every hydroelectric dam they must pass along this critical migration corridor. These dams also pose significant migration challenges to returning adults.

Over-allocation under state water law with more allocated water rights than existing stream flow conditions can support, has detrimentally affected many stream reaches designated as critical habitat in the Interior Columbia Recovery Domain, including the Walla Walla River basin. Withdrawal of water, particularly during naturally low-flow periods, often increase summer stream temperatures, reduce habitat area, block fish migration, strand fish, and alter sediment transport (Spence et al. 1996). Reduced tributary stream flow is a major limiting factor for MCR steelhead in the Walla Walla River basin (Corcoran et al. 2011b; NMFS 2009).

Despite these degraded habitat conditions, the HUCs that have been identified as critical habitat for MCR steelhead are largely ranked as having high conservation value. Conservation value reflects several factors, including 1) how important the area is for various life history stages, 2) how necessary the area is to access other vital areas of habitat, and 3) the relative importance of the populations the area supports relative to the overall viability of the DPS. The Cottonwood Creek Watershed, within which the Nursery Bridge drop structure is located, has a medium conservation value.

The action area for this project is in the Cottonwood Creek watershed, which provide 29.7 miles of freshwater spawning/rearing PCEs, 26.1 miles of rearing and migration PCEs, and 23 miles of migration/presence PCEs. After reviewing the available data for this subbasin, the CHART concluded the PCEs in this watershed support one of three extant demographically independent populations in the Umatilla/Walla Walla MPG. The CHART determined that the quality of the PCE's in the Cottonwood Creek watershed are patchy and degraded and are of medium conservation value. However, the CHART noted that the area is a critical high value rearing and migration corridor for the upstream areas that produce over 75% of the Walla Walla River steelhead population (NMFS 2005b; 2009). The key activities affecting PCEs in the Cottonwood Creek watershed is irrigated agriculture, development, wildfire and associated disturbance, and road building and maintenance. The Environmental Baseline section, below, describes the present condition of these PCEs in the action area.

NMFS expects climate change to alter critical habitat as described above in Section 2.2 by generally increasing temperature and peak flows and decreasing base flows. Although changes will not be spatially homogenous, effects of climate change will generally decrease the capacity of critical habitat to support successful spawning, rearing, and migration.

2.3 Environmental Baseline

The "environmental baseline" includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02). As indicated more generally in the Status of Critical Habitat section above, current conditions within much of the mainstem Walla Walla River are

degraded relative to historic conditions; a reflection of a multitude of actions whose effects frame the environmental baseline in the action area.

The 2009 Recovery Plan and the 2011 update describe threats and limiting factors for the Walla Walla River steelhead population (NMFS 2009; SRSRB 2011). Generally, the environment for listed species in the Columbia River Basin overall, including MCR steelhead, has been dramatically affected by hydroelectric and water storage development both in the United States and Canada. For MCR steelhead, there are also numerous tributary habitat problems related to irrigation diversions, degraded riparian and in stream habitat from levee construction, agriculture, floodplain development, urbanization, grazing and timber harvest.

The construction, maintenance, and operation of the Milton-Freewater flood protection system of which the Nursery Bridge drop structure is one component has severely altered the environmental baseline of the Walla Walla River in the action area. Briefly, the 5.5-mile long Milton-Freewater levee system constructed by the Corp between 1949 and 1952 confines the Walla Walla River floodplain to a width of 250 feet, an 85% reduction in width from the pre-levee river corridor (Webster 2014). Severe levee damage in 1964-1965 included a total loss of riprap toe material along 35% of the levee length and vertical degradation ranging from 3.3 to 9.0 feet. In 1967, the Corps constructed the Nursery Bridge drop structure and fishway (west side of channel) because of the accelerated vertical degradation that occurred between 1952 and 1965. Channel degradation has continued and in 2001, the CTUIR financed construction of a new fishway on the east side of the drop structure. Repairs to the drop structure, similar to what is currently proposed, have occurred several times, most recently in the summer of 2012. At the Nursery Bridge site, the flood-control levees parallel the river along its west (left) bank and a high terrace constrains the river on the east bank. The terrace at the Nursery Bridge site consists of high, eroded banks of cemented alluvium. The channel is severely incised downstream of Nursery Bridge, and vegetation is much less abundant.

In stream flow-related operations associated primarily with irrigation have had major adverse impacts on the productivity of salmonids in the action area. The Walla Walla River in the action area is on the Oregon Department of Environmental Quality (ODEQ) 303(d) list for water temperature (2005). Sediment and turbidity are not documented as problems in the action area but are considered general problems throughout the subbasin. The mainstem of the Walla Walla River above the Little Walla Walla irrigation diversion (1/2 mile upstream of Nursery Bridge) maintains relatively good year-round flow due to the strong influence of groundwater in the South Fork Walla Walla River. Historically, irrigators diverted flow at the Little Walla Walla Irrigation Diversion Dam to an extent that several miles of river downstream were dry, including the action area, during the summer and fall. Approximately 25 cubic feet per second (cfs) is currently flowing through the area downstream of Nursery Bridge during low flow periods due to an agreement between the USFWS and three local irrigation districts (U.S. Fish and Wildlife Service, 2001).

Floodplain development (and the actions taken to protect against flooding, i.e., levees) is another major threat to MCR steelhead recovery in the action area. Floodplain development has a range of adverse effects on steelhead by reducing the quality and quantity of habitat in the main river channel and reducing or eliminating off-channel floodplain habitats. Adverse effects include: (1)

discharging pollution from developed areas, (2) reducing the amount and functional integrity of riparian vegetation that contribute food, shade, large woody debris (LWD), and overhead cover to fish, (3) altering water, LWD, and sediment exchange between the main channel and off-channel habitats, (4) limiting access of fish into and out of off-channel habitats, and (5) floodplain development physically occupies floodplain area and shorelines that would otherwise be accessible and provide highly productive steelhead rearing habitat.

Floodplain development in the action area has replaced what was once a network of diverse habitats occupied by steelhead with a simplified waterway that cannot provide adequate depth, shade, temperature, or access to floodplain habitats. In addition, irrigation diversions, levee construction, and floodplain development have altered the hydrology and the movement of sediment through the action area. Agricultural and suburban development now occupy the majority of the floodplain in the action area. These floodplain areas are isolated from the Walla Walla River by a series of levees and transportation infrastructure throughout most of the action area. The waterward faces of these structures are composed of rock riprap and often barren of riparian vegetation.

Currently, NMFS, USFWS, CTUIR, ODFW, MFWCD, Walla Walla Basin Watershed Council (WWBWC) and the Corps are considering and evaluating a variety of temporary and permanent solutions to remedy the conditions along the Walla Walla River near Milton-Freewater. NMFS is aware of discussions on several projects in the action area concerning grade control structures below the Nursery Bridge facility and a long-term vegetation management plan along the Walla Walla River in the action area.

Overall, irrigation diversions, agricultural practices, development, channelization, and road building have degraded the environmental baseline of the action area. Thus, many aquatic habitat indicators are not properly functioning in the action area. Due to the nature and scale of the proposed project activities that are the subject of this BA, it is reasonably likely the project will maintain all baseline habitat indicators in the Walla Walla subbasin.

The action area provides PCEs of critical habitat for spawning, migration, and rearing, though these persist in a largely degraded condition. The baseline condition limits the amount of suitable juvenile rearing habitat, and limits the amount of time that the available habitat is suitable for rearing juvenile steelhead. These conditions limit the productivity of the action area by capping carrying capacity and suppressing juvenile to adult survival.

2.4 Effects of the Action on the Species and their Designated Critical Habitat

“Effects of the action” means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those caused by the proposed action and are later in time, but still are reasonably certain to occur.

Effects of the action that reduce the ability of a listed species to meet its biological requirements may increase the likelihood that the proposed action will result in jeopardy to that listed species or in destruction or adverse modification of a designated critical habitat.

Based on the information provided and developed during the consultation, the proposed action will adversely affect MCR steelhead and their critical habitat. Habitat in the action area is currently degraded and harms MCR steelhead by limiting the quantity and quality of spawning, rearing, and migration habitat. The PCEs in the action areas are those for freshwater spawning, rearing, and migration. The essential elements of these PCEs include water quantity and floodplain connectivity to form and maintain physical habitat conditions that support growth and mobility, water quality and forage that support juvenile development, and water quality and quantity conditions and natural cover, side channels, and vegetation to support juvenile and adult mobility and survival.

General effects that will occur because of the proposed actions are: (1) injury or death from fish exclusion techniques; (2) temporary turbidity caused by in-channel work (excavation and placement of gabions). Indirect effects include behavioral changes resulting from elevated turbidity levels during channel re-watering following construction.

2.4.1 Effects on Species

Fish Exclusion from the Worksites

The proposed construction actions below the OHWM will take place between July 1 and September 30, 2012 when only juvenile MCR steelhead are in the river. Therefore, construction will not directly affect adult steelhead. The Corps will use seines to "herd" fish out of the work area or dipnets to capture and release into flowing water any individual fish present in the work isolation area (the drop structure stilling basin). A Corps' fish biologist or equivalent with experience supervising fish exclusion operations will supervise or conduct all fish exclusion and handling activities. Fish exclusion, work area isolation, and project implementation during the in-water work window are intended to minimize impacts of the in-water construction to salmonids. Fish handling, capture, collection and seining may injure fish and can include stress-related phenomena. Stress approaching or exceeding the physiological tolerance limits of individual fish impairs reproductive success, growth, resistance (Wedemeyer et al. 1990).

In the summer of 2004 and 2005, the CTUIR conducted studies to determine juvenile *O. mykiss* densities in several reaches of the Walla Walla River (Mahoney et al. 2006). In a study reach at RM 43.1 (one and one-half miles downstream of Nursery Bridge and the proposed work area); the CTUIR found total densities (age 0 and 1+) of 30.7 to 36.6 fish per 1,000 square feet. Their density study forms a reasonable basis to estimate how many fish will likely occupy the action area. The total area that will require dewatering and possible fish capture and removal is approximately 11, 400 square feet. Using the highest density of 36.6 fish per 1,000 square feet, we would anticipate a maximum of 417 juvenile *O. mykiss* in the area that will be temporarily dewatered. Because the work will occur during normal low flows (between July 1 and September 30) and the majority of the flow at that time is directed through the ladder and not across the stilling basin, NMFS will assume that only half of the work area is wetted and occupied during the work window, or 5,700 square feet and a maximum of 208 juvenile *O. mykiss* in the area to be dewatered. Because the majority of the area to be dewatered is a concrete stilling basin where fish will have very limited hiding areas and fish can be easily "herded" over into the remaining flow, NMFS assumes at least 80 percent of these (166 fish) will

be unable to hide and will move away from the disturbance of people and nets in the area and avoid stranding within the dewatering area. Of the 42 or fewer *O. mykiss* likely to remain in the dewatering area, NMFS expects that further removal efforts with seines and dipnets will be 100 percent effective because of the lack of natural substrate to hide in. NMFS also estimates that not more of the than 5 percent (2 fish) of the fish captured or handled will be killed or experience sufficient harm to result in death. During other annual salvage activities conducted by the CTUIR in the same general area, no direct mortalities have been observed and a rate of less than 5 percent potential mortality was estimated.[4]

Before beginning fish exclusion, the Corps will divert all flow upstream of the stilling basin through the fish ladder on the east side of the channel. To maintain fish passage the Hudson Bay District Improvement Company (HBDIC) and the CTUIR generally manage this each year during low flows under an existing Operation and Maintenance Biological Opinion (NWR-2011-749). The Corps will work with the HBDIC, the CTUIR, the MFWCD, and ODFW to maintain flow through the east ladder and ensure minimal subsurface flows without passage can reach the drop structure. As surface flow over the stilling basin declines or immediately after it is diverted, fish exclusion will begin by dragging a seine across the stilling basin to "herd" any fish toward the remaining flow at the east side near the ladder. After using the seine a few times, dipnets may be required for any fish stranded in isolated pools. Because of the flat surface of the stilling basin, NMFS expects seining will likely be at least 80 percent effective and thus it is unlikely that more than 42 fish will need to be dipnetted and only two will experience stress or handling that results in injury or death. If necessary, the Corps will place sandbags on the stilling basin to prevent flow that could support fish passage from entering the work area. When work is completed, the Corps will again coordinate restoration of flows with the HBDIC, MFWCD, ODFW, and the CTUIR.

At approximately the same time that the Corps expects to be working on the drop structure, the MFWCD, who also maintains the levee structures, is planning to be working in the main channel immediately downstream of the drop structure to repair the right bank levee toe (NWR-2011-3126). In addition, during the 2014 summer work window, the CTUIR, MFWCD, and the WWBWC are planning to work in the channel immediately downstream of the east fish ladder to correct erosion that is preventing fish from reaching the ladder (NWR-2013-9724). All of the above-mentioned parties are aware of all the proposed work in the area this summer and will communicate and coordinate their actions to the maximum extent possible to reduce the frequency, duration, and intensity of possible disturbance to fish and to the channel itself. Assuming the fish exclusion process conducted by the Corps will result in the death of up to two juvenile fish, this extent of mortality will not influence the abundance or productivity of the affected population of MCR steelhead. The loss of two juvenile *O. mykiss* is insignificant at the population and DPS scale.

Water Quality

When flows are reestablished, the proposed action has the potential to temporarily increase turbidity in MCR steelhead habitat immediately downstream of Nursery Bridge. NMFS expects

[4] Personal communication (telephone) with Bill Duke, Fish Habitat Biologist, Oregon Department of Fish and Wildlife, 2006, 2010,2013.

any turbidity will be relatively short-lived and of moderate intensity. In general, concentrations of suspended sediment increase rapidly with the onset of instream work and recede markedly with the cessation of work (Reid and Anderson 1999). The duration and magnitude of suspended sediment increases vary with stream size, flow volume, construction activity, sediment characteristics, and Best Management Practices (BMPs). Very low flow conditions can result in minimal dilution and high suspended solid concentrations, although the distance of downstream transport may be minimized (Newcombe and Macdonald 1991). Temporary increases in suspended sediment concentrations have highly variable effects on fish, ranging from behavioral effects including alarm reactions and avoidance responses to sublethal effects including reduced feeding and physiological stress (Newcombe and Jensen 1996). Direct mortality can occur at very high concentrations and/or extended durations of suspended solids and temperature acts synergistically to increase the effect of suspended sediment. The severity of effect of suspended sediment increases as a function of the sediment concentration and exposure time, or dose (Bash et al. 2001; Newcombe and Jensen 1996).

Although NMFS expects most fish in the area to be in an age class that can avoid the turbidity, the low flows and corresponding elevated turbidity levels could result in conditions that will affect the behavior of some juvenile MCR steelhead. If avoidance behavior displaces fish from preferred shallow water rearing habitat, it can result in greater expenditure of energy, greater exposure to predator fish, and greater competition for holding areas and suitable prey base. For those fish that cannot avoid turbid conditions, effects of suspended sediment, either as turbidity or suspended solids, are well documented (Bash et al. 2001; Berg and Northcote 1985; Lloyd et al. 1987; Servizi and Martens 1987; Servizi and Martens 1991; Sigler et al. 1984).

When flow is reintroduced, turbidity that could result in temporary behavioral changes (avoidance) is likely to occur in short bursts of moderate intensity. Individual juvenile listed fish are likely to experience short-term displacement from preferred stream position, mild sensory impairment, and interrupted feeding movement. Overall, NMFS does not expect turbidity to appreciably alter survival or fitness of any of those fish within the mixing zone.

Relevance of Effects on Individual Fish to Salmonid Population Viability

NMFS assesses the importance of habitat effects in the action area on individual fish, to the DPS, by examining the relevance of those effects to the characteristics of VSPs. The characteristics of VSPs are sufficient abundance, population growth rate (productivity), spatial structure, and diversity. While these characteristics are generally described as unique components of population dynamics, each characteristic exerts significant influence on the others. For example, declining abundance can reduce spatial structure of a population; and when habitats are less varied, then diversity among the population declines.

The MCR steelhead juveniles that rear in the action area, and adults that migrate through the area, are genetically distinct within the DPS and therefore important for maintaining the diversity within the DPS. The death or injury of up to two of the juvenile *O. mykiss* from Walla Walla population during exclusion actions will be insignificant when considered at the local population scale. Therefore, the proposed action will not significantly affect abundance within the Walla Walla population of MCR steelhead. The Walla Walla population of MCR steelhead is part of

the Walla Walla-Umatilla Rivers MPG. The loss of up to two juveniles will not impair the viability characteristics of abundance, productivity, genetic diversity, or spatial structure of the MPG.

2.4.2 Effects on Critical Habitat

NMFS first analyzes the effects of the action on PCEs of critical habitat within the action area. Then, NMFS considers whether those effects have any bearing on the function of critical habitat at the subwatershed or habitat unit. If the presence of those PCEs in the watershed in which the action area lies is rare, or their function is already limited there, then NMFS considers the conservation role of that watershed relative to the entire area of designated critical habitat (Hogarth 2005).

Designated critical habitat within the action area consists primarily of freshwater migration and rearing PCEs. The essential elements of PCEs affected by the proposed action are water quality and quantity, substrate, forage, side channels, floodplain connectivity, natural cover and absence of obstructions all of which support adult and juvenile survival, growth, and mobility. The action area does not provide floodplain connectivity or side channels, and limited year-round cover, vegetation or water quantity in the summer irrigation season to support juvenile and adult mobility and survival. In the action area, the freshwater habitat elements that are present, forage, water quality, and water quantity (outside the summer irrigation season) are degraded. They function to support the steelhead life histories expressed in the action area, but are not properly functioning.

Water Quality

Water quality is an essential element of all three of the PCEs. Excavation and placement of the gabions in the channel immediately downstream of the stilling basin will result in short-term turbidity increases. In the upstream areas no excavation will occur below the OHWL so only minor disturbance is expected when action is taken to direct all the flow through the ladder. NMFS expects reintroduction of flows to result in minor turbidity immediately downstream of the disturbed area. The Corps will complete work by the end of September, when flows will still be relatively low. Based on past activity in the area, initial reintroduction of the low flows into the repaired area is unlikely to exceed 300 feet downstream of the work area for more than a few hours.

NMFS believes, that based on flows, water quality changes in the action area will return to baseline levels within several hours as flows are reintroduced to the repaired area. NMFS does not expect these effects from the proposed action to appreciably reduce the suitability of the action area as a migration corridor because effects will occur when fish are not migrating. However, repairing the drop structure and stilling basin will contribute to channel stability at the location and maintain safe fish passage to some of the best habitat in the watershed that lies upstream of the Nursery Bridge site.

Chemical Contamination

As with all activities involving the use of mechanized and equipment, accidental release of fuel, oil, and other contaminants may occur. NMFS expects that the use of machinery in or near the channel will result in a small amount (not more than a few ounces) of oil and hydraulic fluid being leaked during operations into the stream channel. Any mechanical leaks will have short-term adverse effects on water quality and macroinvertebrates. Operation of machinery in close proximity to a stream increases the chance a large fuel spill or hydraulic line rupture will contaminate the water. The probability of this occurring is very low, but not discountable. Implementation of the proposed best management practices will minimize the probability of occurrence and any potential adverse effects from these activities.

Relevance of Effects on Primary Constituent Elements to Conservation Value

As described above, the proposed action will have a short-term negative effect on water quality. Because the detrimental effects are temporary, adding these changes to the baseline condition does not permanently modify the functions of the relevant PCEs in a negative manner nor are the effects at an appreciable level within the watershed. Since these effects are not noticeable beyond the site scale, they will not appreciably diminish the conservation value of the watershed in which the site is located.

Though adverse and significant at the action area scale, effects will not be significant at the HUC5 watershed scales in part due to offsetting beneficial effects (channel stability and passage). Therefore, the proposed action will not significantly affect the conservation value of designated critical habitat for MCR steelhead.

After reviewing the status of MCR steelhead, the environmental baseline within the action area, the effects of the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of MCR steelhead. Similarly, the proposed action's combination of negative and positive effects on the PCEs of critical habitat will not diminish the conservation value of critical habitat, so NMFS concludes that the project will not destroy or adversely modify its designated critical habitat.

2.5 Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA. Cumulative effects, when combined with baseline effects and effects of the action, may increase the likelihood that the proposed action will result in jeopardy to a listed species, or in destruction or adverse modification of designated critical habitat.

During this consultation, NMFS searched for information on future State, tribal, local, or private actions that were reasonably certain to occur in the action area. NMFS believes the majority of future growth will include environmental effects such as land clearing, associated land-use changes (i.e., from forest to lawn/pasture), increased impervious surface, and related watershed changes, such as altered stream hydrograph, temperatures, and pollutant loading. Land use changes and development of the built environment are likely to continue under existing zoning.

Furthermore, NMFS believes that many of the existing local and state regulatory mechanisms intended to minimize and avoid effects on watershed function and listed species from future commercial, industrial, and residential development are generally not adequate, and/or not implemented sufficiently. Though these existing regulations could slow the rate of adverse effects on watershed function, as currently construed and implemented, they still allow incremental degradation to occur. Over time, the incremental degradation, when added to the already degraded environmental baseline, can result in reduced habitat quality for MCR steelhead.

There are many on-going habitat restoration projects throughout the Walla Walla River drainage. These projects include, but are not limited to, proper screening of water diversions, riparian plantings, removal of fish passage barriers, piping of irrigation withdrawals, culvert replacements, and placement of in-stream structures. To the extent that recovery actions are implemented and on-going actions continue in the Walla Walla River basin, adverse cumulative effects may be minimized, but will probably not be completely avoided. NMFS expects additional residential and commercial development and a general increase in human activities to cause localized degradation of freshwater. Interest in restoration activities is also increasing, as is environmental awareness among the public. This will lead to some localized improvements to freshwater habitat.

When these influences are considered collectively, we expect trends in general habitat quality to remain flat or improve gradually over time. This will positively influence population abundance and productivity for the species affected by the proposed action. In a worst-case scenario, cumulative effects, when balanced with expected federally sponsored recovery actions, will not have an aggregate effect on population abundance trends. Similarly, we expect the quality and function of critical habitat PCEs or physical and biological features to express a slightly positive to neutral trend over time because of the cumulative effects and anticipated federally mandated recovery actions. However, as most activities water ward of the OHWM, whether for recovery or other uses, require a Corps permit, NMFS anticipates that most actions will require some future ESA consultation. In addition, NMFS would review most future state or tribal actions because of the likelihood of some form of Federal funding or authorization. This limits the scope of cumulative effects that can be factored in this analysis. To the extent that recovery actions are implemented and on-going actions continued in the Walla Walla River basin, adverse cumulative effects may be minimized, but are not likely to be completely avoided.

2.6 Integration and Synthesis

The Integration and Synthesis section is the final step of NMFS' assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.4) to the environmental baseline (Section 2.3) and the cumulative effects (Section 2.5) to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Result in appreciable reductions in the likelihood of both survival and recovery of the species in the wild by reducing its numbers, reproduction, or distribution; or (2) reduce the value of designated or proposed critical habitat for the conservation of the species. NMFS makes these assessments in full consideration of the status of the species and critical habitat (Section 2.2).

The status of the MCR DPS as threatened is largely a result of low abundance and productivity in several of the populations that make up the DPS. The Walla Walla River MCR steelhead population that is at moderate risk for abundance, productivity, spatial structure, and diversity will experience the effects of the proposed action. The project will not adversely affect spatial structure or diversity of the Walla Walla population. In fact, it will maintain or improve passage that supports spatial structure. Even though injury or death are expected to two fish as a result of the action, this loss will not influence current levels of productivity, because the reduction is so insignificant that no discernible change in the number of returning adults would result.

Cumulative effects in the action area are likely to include both positive and negative aspects for habitat conditions and for the fish that use the action area. Anticipated cumulative effects from human population growth over time in the action area are likely to continue to impair water quality, restrict floodplain connectivity, and prevent reestablishment of side channels. However, restoration projects are likely to reduce or reverse some negative habitat conditions. NMFS does not expect the injury or death of two individual fish together with anticipated cumulative effects, to significantly alter viability parameters in a negative manner among the affected population.

Similarly even though the status of critical habitat is degraded, in part because of impaired rearing habitats range-wide, the temporary degradation (immediately post-construction) of this small migration and rearing area will not further diminish conservation potential of the habitat, because the net effect of the project is to maintain channel stability and safe passage. The PCE affected during the project is water quality. Water quality will be briefly reduced. NMFS believes this effect is insignificant at the watershed scale because it will not persist for more than a few hours and will not be intense enough to kill or injure MCR steelhead.

The effects from the environmental baseline in the action area already limit carrying capacity and productivity because of channel confinement (levees system which includes the drop structure) that contribute to poor water quality (temperature), lack of riparian vegetation, poor instream habitat complexity, and lack of floodplain connectivity or access to side channels. The long-term effect of the project will be to maintain passage but continue to constrain total carrying capacity and productivity by maintaining the channel confinement system that results in poor water quality and instream habitat and inaccessibility to side channels or floodplain access, which presently impede successful rearing among large numbers of juvenile steelhead from the Walla Walla population.

2.7 Conclusion

NMFS concludes that the proposed action will not appreciably reduce the abundance, productivity, diversity, or spatial structure of the MCR steelhead DPS, because the death of two (or fewer) juveniles from the Walla Walla population will not be significant to impair the viability of the MPG. In turn, the action will not influence the long-term survival of the DPS to which those populations belong. When viability of the affected populations is not altered by the project, the numbers, reproduction, and distribution of the DPS will also remain unaltered.

NMFS also concludes that, the conservation value at both the watershed scale, and the scale of the full designation of critical habitat for the MCR steelhead DPS will be unchanged, therefore there is no destruction or adverse modification of designated critical habitat.

2.8 Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by regulation to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. For purposes of this consultation, we interpret "harass" to mean an intentional or negligent action that has the potential to injure an animal or disrupt its normal behaviors to a point where such behaviors are abandoned or significantly altered. Section 7(b)(4) and Section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA, if that action is performed in compliance with the terms and conditions of this incidental take statement.

2.8.1 Amount or Extent of Take

Effects of the action will coincide with the presence MCR steelhead covered in this opinion such that incidental take in the form of harm is reasonably certain to occur. The action area is used by MCR steelhead juveniles for rearing, and adult and juvenile migrations. NMFS expects juvenile MCR steelhead to be present in the project vicinity during the work window exposing them to effects from fish exclusion activities and degraded water quality.

For this consultation, NMFS estimated the specific number of fish taken by capture during exclusion operations. The estimated number of fish captured and their mortality rate are derived from a 2004 and 2005 CTUIR investigation of juvenile *O. mykiss* densities in the same reach during the in-water work window (Mahoney et al. 2006) and several years of annual salvage activities at Nursery Bridge with no observed immediate mortalities and an estimated five percent mortality. Based upon the previous density reports and including a conservative margin NMFS has estimated juvenile MCR steelhead captured and removed will not exceed 42 fish. Of these, the fish exclusion process may severely injure or kill two individuals.

Take in the form of harm caused by the temporary increases in turbidity will be manifested in altered behaviors as disorientation of individual fish or vacating turbid water for more suitable sites. Harm will occur to some fish responding to exposure by increasing energy expenditure over normal behavior, increased competition for resources, and exposure to predators. However, other fish will not respond with injury or death. Therefore, in contrast to the fish affected by capture, NMFS is unable to estimate the number of fish harmed by increased turbidity.

In circumstances where NMFS cannot numerically predict the amount of take, we estimate the extent of take by describing the extent of habitat modified by the proposed action (June 3, 1986, 51 FR 19926 at 19954). While this approach can lead to descriptions of the extent of take that

appear to be co-extensive with parameters of the action itself, these habitat-extent estimates are not merely repeated descriptions of the proposed action. Instead, they represent observable metrics of the extent of take, which if exceeded, would trigger reinitiating consultation (see H.R. Rep. No. 97-567, 97th Cong., 2d Sess. 27 (1982)).

The extent of take from habitat modification (turbidity) caused by the proposed action is the 5,700 square foot area downstream of the stilling basin where gabion baskets will be installed. The extent of modified habitat also includes the water column up to 300 feet downstream from the lower-most section of the gabion basket area corresponding to the limit of the temporary turbidity plume in the action area. These descriptions of the extent of modified habitat are the extent of take exempted from the prohibition against take in this statement.

The expected extent of take is also the threshold for reinitiating consultation. If any of these limits are exceeded during project activities, the amount of take would increase beyond that examined in this consultation, and thus the reinitiating provisions of this opinion apply.

2.8.2 Effect of Take

The extent of take from the proposed action is not likely to jeopardize the continued existence of MCR steelhead. The take will reduce the number of fish in one cohort to an indiscernible extent in relative numbers of returning adult spawners, not influencing the viability of the affected population of MCR steelhead. Because the level of abundance is low among most of the populations of MCR steelhead, stasis in the level of productivity leaves these populations at their current levels of risk for both productivity and abundance, not influencing the viability of the affected population of MCR steelhead.

2.8.3 Reasonable and Prudent Measures and Terms and Conditions

Reasonable and prudent measures are nondiscretionary measures to minimize the amount or extent of incidental take (50 CFR 402.02). Terms and conditions implement the reasonable and prudent measures (50 CFR 402.14). These must be carried out for the exemption in section 7(o)(2) to apply.

The Corps has the continuing duty to regulate the activities covered in this ITS where discretionary Federal involvement or control over the action has been retained or is authorized by law. The protective coverage of section 7(o)(2) may lapse if the Corps fails to exercise its discretion to require adherence to terms and conditions of the incidental take statement, or to exercise that discretion as necessary to retain the oversight to ensure compliance with these terms and conditions. NMFS believes all measures described as part of the proposed action, together with use of the Reasonable and Prudent Measure and Terms and Condition described below, are necessary and appropriate to minimize the likelihood of incidental take of listed species due to completion of the proposed action.

The Corps shall:

1. Avoid or minimize the amount of take associated with exclusion operations by using appropriate exclusion techniques and equipment.

2. Avoid or minimize the amount of take associated with reduced water quality from turbidity or other pollutants generated or used during the action.

3. Complete a comprehensive monitoring and reporting program to ensure implementation of requirements found in this Opinion.

To be exempt from the prohibitions of section 9 of the ESA, the Corps must fully comply with the following terms and conditions that implement the reasonable and prudent measures described above. Partial compliance with these terms and conditions may invalidate this take exemption.

1. To implement reasonable and prudent measure No. 1 (avoid or minimize the effects of exclusion operations) the Corps will ensure that:
    a. A Corps, ODFW, or CTUIR fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.
    b. Fish exclusion activities will occur when water temperatures are lowest, i.e., early in the morning.
    c. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.
    d. Captured fish must be released as near as possible to capture sites.
    e. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

2. To implement Reasonable and Prudent Measure No. 2 (reduced water quality) the Corps will:
    a. Only work below the OHWM in the stilling basin and the area immediately downstream of the stilling basin after the area is dewatered.
    b. Limit disturbance of the channel to only that needed for excavation and installation of the rock gabions. Do not use fines to fill interstitial spaces in the gabions but ensure that the restored area consists of an appropriate mix of native materials (gravel and cobbles similar to undisturbed stream reaches).
    c. Any turbid water that enters the work area will be pumped to an upslope location, discharged, and allowed to infiltrate.
    d. Pollution Control Plan. A Pollution and Erosion Control Plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by NMFS. The plan must include the following contents:
        i. Practices to prevent erosion and sedimentation associated with access roads, stream crossings, equipment and material storage sites, fueling operations and staging areas.
        ii. A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling and monitoring.

iii. A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spoiled materials, and employee training for spill containment.
iv. Hydraulic equipment that works below the OHWM should use non-petroleum products in its hydraulic system.

3. To implement reasonable and prudent measure No. 3 (monitoring), the Corps shall:
   a. Within 120 days of project completion, the Corps will submit a monitoring report to NMFS describing the Corps' success in meeting the terms and conditions contained in this Opinion. Submit a copy of the report to NMFS Interior Columbia Basin Area Office, Columbia Basin Branch at:

      Attention: Diane Driscoll 2014-594
      National Marine Fisheries Service
      Columbia Basin Branch
      304 South Water Street, Suite 201
      Ellensburg, WA 98926

NOTICE: If a sick, injured or dead specimen of a threatened or endangered species is found in the action area, the finder must notify NMFS Law Enforcement at (206) 526-6133 or (800) 853- 1964, through the contact person identified in the transmittal letter for this Opinion, or through the NMFS Columbia Basin Branch Office. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder should carry out instructions provided by Law Enforcement to ensure evidence intrinsic to the specimen is not disturbed unnecessarily.

2.9 Section 7(a)(1) Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The following recommendation is discretionary and consistent with this obligation and therefore should be carried out by the Corps:

The proposed action, repair of the stilling basin, is a reoccurring issue. As is the proposed work by the MFWCD and the CTUIR this summer to repair severe levee toe erosion and downcutting that adversely affects fish passage and channel stability. NMFS believes that a long-term, "reach based" evaluation of the Milton-Freewater levee system is necessary. New information on hydraulic and sediment transport in the reach, continuing requirements by local entities and the CTUIR to repair erosion, arrest downcutting, and provide fish passage all suggest that the current design is not functioning appropriately in regard to river mechanics and fish passage. Under Section 216 of the 1970 Flood Control Act, the Corps has the authority to " review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to significantly changed physical or economic conditions,

and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest" (P.L. 91-611, 33 U.S.C. §549a).

At the very least, NMFS recommends that the Corp conduct an assessment that would include:

- An updated discharge-frequency analysis
- A sediment transport model
- Measure suspended load and bedload above and within the levee reach
- Representative sampling of the channel bed material and levee revetment
- Evaluation and modeling of the hydraulic performance of the stilling basin at the Nursery Bridge drop structure
- The rate and endpoint of channel bed degradation through the levee system

The results of this assessment should be shared with the local levee managers, the city of Milton-Freewater, USFWS, NMFS, CTUIR, ODFW, and other potentially impacted parties to resolve the long-term issues that detrimentally affect ESA-listed species in this reach of the Walla Walla River. Under the current process, using PL 84-99, the Corps is restricted to returning a site to the condition it was in prior to flood damage. It should be obvious by now that continuing to return damaged sites to pre-damaged condition is inadequate and economically unsustainable for the surrounding community. The chronic need for repairs to the levees and the stilling basin strongly suggest that the design and condition of the levees and stilling basin are inadequate and that review and possible redesign of the stilling basin and the entire levee system is called for.

Please notify NMFS if the Federal action agency carries out any of this recommendation, so that we will be kept informed of actions that are intended to improve the conservation of listed species or their designated critical habitats.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The consultation requirement of section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 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 on 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). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by the Corps and descriptions of EFH for Pacific coast salmon (PFMC 1999) contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

The proposed action and action area are described in the BA and this letter. The project area includes habitat, which has been designated as EFH for various life stages of Chinook salmon (*O. tshawytscha*) salmon.

3.2 Adverse Effects to Essential Fish Habitat

The proposed action will result in the following adverse affects to EFH for Chinook salmon:

- Water Quality. The action will result in a short period of increased turbidity and decreased water quality.

3.3 Essential Fish Habitat Conservation Recommendations

NMFS believes that the following conservation measures are necessary to avoid, mitigate, or offset the impact of the proposed action on EFH.

1. The Corps should carry out measures described in the ESA Terms and Conditions in the Incidental Take Statement to protect water quality (T&C No. 2) as they are also applicable to address adverse effects of the action on designated EFH for Chinook salmon.

NMFS expects that full implementation of these EFH conservation recommendations would protect designated EFH for Pacific coast salmon, by avoiding or minimizing the adverse effects described in section 3.2.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the Federal agency must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation from NMFS. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations, unless NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NMFS Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The Corps must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920(l)).

4.0 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

Section 515 of the Treasury and General Government Appropriations Act of 2001 (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users.

The intended users of this opinion are the Corps. Other interested users could include the citizens of Milton-Freewater, Umatilla County in Oregon, CTUIR, and others interested in the conservation of MCR steelhead. Individual copies of this opinion were provided to the Corps. This opinion will be posted on the NMFS Westcoast Region website (http://www.westcoast.fisheries.noaa.gov). The format and naming adheres to conventional standards for style.

4.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

4.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA Regulations, 50 CFR 402.01, et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.920(j).

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the Literature Cited section. The analyses in this opinion/EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

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