

Klickitat Hatchery Complex Program

Draft Environmental Impact Statement

Executive Summary

July 2011

Executive Summary

Chapter 1: Purpose of and Need for Action

Bonneville Power Administration (BPA) proposes to fund changes to the existing anadromous fish production programs and facilities in the Klickitat River Subbasin in Klickitat and Yakima counties in Washington that would be implemented in partnership with the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation). The current programs are funded by the National Marine Fisheries Service (NMFS) under the Mitchell Act of 1938, 16 USC § 755,757 (Mitchell Act), and are co-managed by the Yakama Nation and the Washington Department of Fish and Wildlife (WDFW). The proposed changes would integrate the existing programs with the Yakima/Klickitat Fisheries Project (YKFP), which is funded by BPA through the Pacific Northwest Power Planning and Conservation Act of 1980, 16 USC § 839 et seq. (Northwest Power Act). The YKFP is co-managed by the Yakama Nation and WDFW, and it includes artificial propagation programs designed to reestablish, supplement, or increase natural production and harvest opportunities of salmonids while maintaining the long-term fitness of these target species and minimizing ecological and genetic impacts on nontarget species (e.g., bull trout, lamprey) in the Klickitat and Yakima Rivers.

Modifications to the existing Klickitat Hatchery Complex Program are proposed to better employ “state of the art” artificial propagation methods. The proposal includes construction at the existing Klickitat Hatchery, plans to develop new hatchery and acclimation facilities at Wahkiacus (approximately 26 river miles downstream of the existing hatchery), and possible construction of a steelhead acclimation facility on McCreedy Creek, which is a tributary to the Klickitat River upstream of the Klickitat Hatchery.

The proposed action would support BPA’s efforts (pursuant to the Northwest Power Act) to further mitigate the adverse effects of the Federal Columbia River Power System (FCRPS) on salmonids generally and fish in the Klickitat River Subbasin particularly by increasing the abundance of native spring Chinook salmon and steelhead populations in the watershed. Also, by providing the funding, BPA would make continued progress toward meeting its obligations under the 2008 Columbia Basin Fish Accords Memorandum of Agreement and the Northwest Power Act. The proposed action would also result in increased numbers of harvestable fish in the subbasin for Yakama Nation tribal members and others who fish for salmon and steelhead. By reducing the numbers of smolts of introduced species (coho salmon) released into the subbasin and applying the most current findings regarding acclimation and integrated hatchery reform, the Klickitat Hatchery Complex Program is endeavoring to achieve self-sustaining native fish populations in the Klickitat River Subbasin.

The following purposes have been identified for the Klickitat Hatchery Complex Program:

- To comply with the Federal Columbia River Power System (FCRPS) Biological Opinion, which calls on the FCRPS Action Agencies to ensure that hatchery programs funded by them as mitigation for the FCRPS are not impeding recovery of listed anadromous fish.

- To aid in the conservation of mid-Columbia steelhead listed as threatened under the Endangered Species Act.

In addition to these objectives that BPA seeks to fulfill, the cooperating agencies and the Yakama Nation also seek a preferred alternative that:

- Supports the Yakama Nation's exercise of its treaty fishing rights by rebuilding native steelhead and spring Chinook anadromous fish stocks in the Klickitat River Subbasin using artificial production methods that have been tested by the tribe and that are supported by hatchery reform recommendations.
- Is consistent with production and harvest objectives as specified in the 2008-2017 *United States v. Oregon* Fish Management Agreement.

This Environmental Impact Statement (EIS) is intended to fulfill the requirements of the National Environmental Policy Act (NEPA) and the State of Washington Environmental Policy Act (SEPA) by examining the reasonably foreseeable environmental effects of the alternatives for the proposed action and a no action alternative. BPA is the lead federal agency for this EIS. The NMFS, WDFW, Bureau of Indian Affairs, and Yakama Nation are cooperating agencies. Each agency involved will consider the information in the EIS, public comments, and its own expertise related to the project in making decisions related to the EIS. BPA's decisions will be documented in a Record of Decision (ROD) following publication of the final EIS. WDFW's decisions will be documented through the SEPA process.

Chapter 2: Alternatives

The Yakama Nation developed the Klickitat River Anadromous Fisheries Master Plan (2008) to address fish production needs for the Klickitat River Subbasin. The Master Plan is the basis for the proposed action and was used in the development of alternatives. Three alternatives are fully evaluated in this EIS: the no action alternative and two action alternatives. The two action alternatives being fully evaluated are Full Master Plan Buildout and Klickitat Hatchery Buildout.

Alternative 1 – No Action Alternative: This alternative would involve the continuation of current management of the Klickitat Hatchery. Current management involves operation of a complex of hatchery buildings, raceways, storage sheds and residential buildings on approximately 83 developed acres at River Mile (RM) 42 of the Klickitat River. Currently, a segregated harvest fish program is implemented at the Klickitat Hatchery. Fish are propagated as genetically discrete or segregated populations relative to naturally spawning populations. The principal intent of a segregated program is to create a separate, hatchery-adapted population that is managed to meet harvest goals. In a segregated program, hatchery fish are maintained primarily or exclusively from adult fish returning to the hatchery. The Klickitat Hatchery propagates and releases 600,000 spring Chinook, rears and releases approximately four million fall Chinook smolts, and rears and releases 1 to 1.2 million coho into the Klickitat River annually. Approximately 120,000 out-of-basin summer steelhead smolts and 2.5 to 2.7 million out-of-basin coho smolts are released directly into the Klickitat River annually under the current program.

Alternative 2 – Full Master Plan Buildout: The Yakama Nation’s 2008 Klickitat River Anadromous Fisheries Master Plan includes modifications to the Klickitat Hatchery, a new hatchery and acclimation facility at the Wahkiacus project site, and an acclimation facility at McCreedy Creek, should it be deemed necessary. Alternative 2 would result in an integrated hatchery/harvest program for spring Chinook, which would increase abundance while minimizing the genetic divergence of hatchery fish from the naturally spawning population. The intent is to produce hatchery fish more genetically similar to naturally-spawning fish. Alternative 2 would continue segregated harvest programs for fall Chinook, coho, and summer steelhead.

The Wahkiacus Hatchery and Acclimation Facility would include a new hatchery building, a maintenance building, a number of raceways, and other buildings and facilities related to fish production. The alternative also includes development of up to three residential buildings at one of two possible locations near the hatchery and acclimation facilities. At the Klickitat Hatchery, some existing buildings and structures would be remodeled, some would be demolished, some would be replaced, and a new steelhead hatchery would be built.

The integrated hatchery/harvest program for spring Chinook would involve replacement of existing broodstock with natural-origin adults collected at Lyle Falls Fishway and Castile Falls. At the Klickitat Hatchery, 800,000 spring Chinook would be incubated, reared, and volitionally released (i.e., voluntarily swimming out on their own) as smolts.

Summer steelhead production would initially be designed as a segregated harvest program. Approximately 130,000 juveniles would be volitionally released from the Klickitat Hatchery for the harvest component. Broodstock to support the program would be collected at the Lyle Falls Fishway and from fish returning to the Klickitat Hatchery. Releasing fish from the Klickitat Hatchery should encourage high site fidelity, allow for a terminal harvest, and could limit the percentage of returning hatchery adults spawning in the wild. If necessary, an upper river (above Castile Falls) conservation program would be developed for summer steelhead with acclimation at McCreedy Creek. In addition, the lower river segregated program may be changed to an integrated program if necessary in the future.

Under Alternative 2, a local broodstock segregated hatchery program for coho would be established. The production goal is to produce sufficient hatchery fish to establish a 14,000 combined (ocean, mainstem, and tributary) adult coho annual harvest. Under this alternative, hatchery production of coho would initially be reduced from 3.7 to 1 million juveniles. The eyed egg imports from the Lewis River Hatchery would be discontinued. Adult coho would be spawned at the Wahkiacus Hatchery and the eggs transferred to the Washougal Hatchery for incubation and rearing. These fish would then be transported back to the Wahkiacus Hatchery for acclimation and volitional release. Additional (up to 2.5 million) Washougal River stock direct releases might be made in the lower Klickitat River if needed to meet the harvest goal.

Alternative 2 also would create a segregated hatchery/harvest program for fall Chinook. Little White Salmon National Fish Hatchery transfers would be eliminated. Adult fall Chinook (including jacks) returning to the Klickitat River would be used as broodstock for the program. The adults would be collected at the Lyle Falls Fishway and Wahkiacus and Klickitat hatcheries. Approximately 2,500 adults would be needed to produce the desired four million

subyearling fall Chinook. Production, including incubation, rearing, acclimation, and volitional release, would be split between the Wahkiacus and Klickitat hatcheries.

Alternative 3 – Klickitat Hatchery Buildout: Hatchery production would be managed at a modified Klickitat Hatchery. No new facilities would be constructed at Wahkiacus. Fish production goals and hatchery/harvest management would be similar to Alternative 2. The use of the Washougal Hatchery would continue in order to achieve production goals. The Klickitat Hatchery modifications would be constructed as described for Alternative 2. In addition, a new 1,400-square-foot raceway would be constructed at the Klickitat Hatchery to accommodate some of the rearing that would have been done at Wahkiacus under Alternative 2.

Alternative 3 would implement an integrated hatchery program for spring Chinook, and segregated programs using locally derived broodstock for summer steelhead, fall Chinook, and coho as described for Alternative 2. However, due to hatchery capacity at the Klickitat Hatchery, additional fish might continue to be imported from or reared at out-of-basin hatcheries such as the Washougal Hatchery.

As with Alternative 2, an integrated hatchery/harvest program for spring Chinook would be implemented under Alternative 3. The goals and methods for production of spring Chinook at Klickitat Hatchery would be the same as for Alternative 2. If there are space limitations, spring Chinook production would have the highest priority at the Klickitat Hatchery.

Production goals and objectives for summer steelhead under Alternative 3 would be the same as described for Alternative 2; however, production could be reduced due to water limitations at the Klickitat Hatchery.

Similar to Alternative 2, Alternative 3 would implement a local broodstock segregated hatchery program for coho salmon, with a production goal sufficient to establish a 14,000 adult coho annual harvest. One million coho salmon pre-smolts would be incubated, reared and volitionally released at the Klickitat Hatchery. If the harvest goal is not met, up to an additional 2.5 million smolts would continue to be imported from the Washougal Hatchery and direct released in the lower Klickitat River.

Like Alternative 2, this alternative would create a segregated hatchery/harvest program for fall Chinook. Adult and jack fall Chinook returning to the Klickitat River would be used as broodstock. The adults would be collected at the Lyle Falls Fishway and Klickitat Hatchery. Approximately 2,500 adults would be needed to produce the desired four million subyearling fall Chinook. Production, including incubation, rearing, acclimation, and volitional release, would occur at the Klickitat Hatchery, although production may be reduced due to water limitations.

Both Alternatives 2 and 3 incorporate adaptive management strategies, remote and/or mobile acclimation facilities, and climate change adaptations. The primary adaptive management strategy considered in this EIS relates to summer steelhead conservation and the recolonization of upstream reaches. Use of mobile acclimation facilities could enhance fish production in the basin because the facilities allow the fish to imprint on the local water and return to the general

area as adults. McCreedy Creek is examined in this EIS as a likely location for mobile acclimation facilities for steelhead. Other adaptive management is proposed for collection of natural origin broodstock for spring Chinook and meeting coho production goals. This EIS also considers adaptations for climate change for both action alternatives.

Chapter 3: Affected Environment, Environmental Consequences, and Mitigation Measures

The EIS characterizes the affected environment and evaluates the potential effects for the alternatives. Existing natural and social resource conditions are described, organized by resource area. The likely effects of implementing the three alternatives on each resource are described based on best available information and data. Mitigation is proposed where environmental effects are anticipated and where these measures could eliminate or reduce environmental impacts. A Mitigation Action Plan would be prepared and made available in the Record of Decision. The existing conditions and potential environmental effects at the Wahkiacus, Klickitat Hatchery, and McCreedy Creek sites are summarized below.

Air Resources

Air quality in the area of the three project sites is in attainment with National Ambient Air Quality Standards. Existing sources of air pollutants in the study area, including vehicle emissions, wood burning for residential home heating, agricultural activities, and resuspension of road dust from traffic on unmaintained roadways, do not impair air quality to a level that requires enforcement action.

Under Alternative 1, air quality would be unaffected as no new pollutant sources would be added. Alternative 1 would have no effect on climate change.

Construction associated with Alternative 2 would cause minor short-term increases in air emissions at the Wahkiacus, Klickitat Hatchery, and McCreedy Creek sites. The emergency use of generators at the Wahkiacus and Klickitat Hatchery sites, and temporary use of generators at the McCreedy Creek site would cause minor short-term adverse impacts on air quality. Some increase in greenhouse gas emissions would occur; however, the contribution to climate change would be minor.

Construction and operation effects of Alternative 3 would be the same as described above for Alternative 2; however, there would be no impact to air quality at the Wahkiacus site because no action would be taken at that site.

Geology and Soils

Geology of the Klickitat River Subbasin consists primarily of basalt flows up to several thousand feet thick. The mainstem of the Klickitat River flows through steep-walled canyons. Soils are formed in alluvium and landslide deposits and are generally well drained sandy loams. The Wahkiacus disturbance area encompasses approximately 12 acres, the Klickitat Hatchery approximately 20 acres, and the McCreedy Creek site less than 2 acres.

Alternative 1 would not involve construction or ground-disturbing activities; therefore, no disturbance to geologic resources is anticipated. Natural geologic processes would continue to be unaffected by Alternative 1.

Under Alternative 2, a total of 33.15 acres of soil would be disturbed at the Wahkiacus, Klickitat Hatchery, and McCreedy Creek sites. Ground disturbing activities would have short-term minor adverse effects of increased erosion and sediment run-off from construction. Best Management Practices would be employed to reduce the impact. Grading at all three sites would permanently alter the soil contours and could result in minor long-term site-specific adverse impacts.

Alternative 3 would alter 21.45 acres at the Klickitat Hatchery and McCreedy Creek sites. Construction and operation effects of Alternative 3 would be the same as described above for Alternative 2; however, there would be no impact to geology and soils at the Wahkiacus site because no action would be taken there.

Water Quality and Quantity

Groundwater at the three project sites is contained in the Columbia River basalt; however, it is not a major source of water for the sites. The Klickitat River is the second longest free-flowing river in Washington and the water quality meets state standards. The Wahkiacus site is bordered by the Klickitat River and its tributary, Swale Creek. Swale Creek is water quality impaired in its lower portion due to high water temperature and low flow conditions. Effluent from the Klickitat Hatchery is within the acceptable ranges of the water quality parameters specified in its National Pollutant Discharge Elimination System permit and does not impair Klickitat River water quality in this reach. Water quality conditions for McCreedy Creek can exhibit increased turbidity and fine sediments as a result of streamside timber harvesting and grazing practices.

Under Alternative 1, the Wahkiacus and McCreedy sites would remain undeveloped and there would be no change to current groundwater, hydrology, water rights, or water quality conditions. At the Klickitat Hatchery site, the primary source of water for hatchery operations would continue to be local springs, which supply approximately 33 cubic feet per second (cfs), and flows of up to 30 cubic feet per second (cfs) would continue to be diverted from the river to make up the remaining water demand, which can be over 60 cfs.

Construction associated with Alternative 2 would increase the erosion potential for soils and increase sediment to the Klickitat River, Swale Creek, and McCreedy Creek during rain events, decreasing water quality. Short-term impacts to water quality would result from in-water work in the Klickitat River, Swale Creek, and McCreedy Creek. Water withdrawals associated with operation of the Klickitat Hatchery would be similar to existing conditions, resulting in a minor adverse effect on Klickitat River water quality and quantity. Water discharged for hatchery facilities would be treated to meet National Pollutant Discharge Elimination System requirements. It is anticipated that infrequent withdrawal from Swale Creek for the operations at the Wahkiacus site during high flow periods would have a minor adverse effect on stream temperature and flow in Swale Creek. Alternative 2 would also result in a minor reduction in

flow in McCreedy Creek for a 150-foot reach between the intake and outfall. The short period of water diversion and limited use of acclimation waters should limit, in duration and intensity, any minor adverse effects to water quality in McCreedy Creek or downstream in the Klickitat River. Any change to water quality in McCreedy Creek from acclimation facility effluent would dissipate quickly as acclimation water mixes with McCreedy Creek flow and, further downstream, with the flow of the Klickitat River.

The environmental effects under Alternative 3 would be the same as described for Alternative 2; however, there would be no impact to the Klickitat River or Swale Creek at the Wahkiacus site because no action would be taken at that site. Additional fish production at Klickitat Hatchery under Alternative 3 would have similar impacts to water supply and water quality as Alternative 2. No additional water rights would be needed.

Fish and Fisheries

The Klickitat River Subbasin supports a variety of native and introduced fish species, including fall and spring/summer Chinook salmon, coho salmon, summer and winter steelhead, bull trout, rainbow/redband trout, Pacific lamprey, and mountain whitefish. Coho and fall Chinook never successfully exploited the Klickitat River Subbasin to any great degree, and for purposes of this EIS are considered an introduced stock. Critical Habitat for Middle Columbia River steelhead and Essential Fish Habitat designated by NMFS for Pacific salmonids (coho and Chinook salmon) are present in the Klickitat River Subbasin.

Under Alternative 1, the Klickitat Hatchery would be operating according to current management with no change in infrastructure, no cessation of out of basin rearing and direct release, no reduction in coho production, and no shift of coho and fall Chinook release to downstream areas. Direct releases of hatchery fish from outside the subbasin would continue. Naturally produced juvenile steelhead and spring Chinook present in the mainstem Klickitat River downstream of the Klickitat Hatchery would continue to be vulnerable to competition with hatchery coho and fall Chinook salmon. Releases of non-native Skamania stock hatchery steelhead in the Klickitat River may continue to affect the Klickitat native steelhead populations. There would be no construction effects to fishery resources. Operational effects from the existing program operations would continue at current levels.

Under Alternative 2, naturally-produced juvenile steelhead and spring Chinook present in the mainstem Klickitat River downstream of the Klickitat Hatchery would be less vulnerable to predation and competition effects from hatchery coho and fall Chinook salmon released downstream from the Klickitat Hatchery at the Wahkiacus facility. In-water construction associated with Alternative 2 would result in a minor short-term loss of instream habitat due to isolating and dewatering work areas. In-water work during approved instream work windows in the summer would also increase turbidity and sedimentation during installation and removal of cofferdams. Handling of fish may be necessary during salvage/rescue operations in the area to be dewatered for construction, with some associated mortality risk. Stress to handled fish would be moderate in the short term. Placement of instream structures (new intakes, fish ladders, etc.) would result in a minor permanent loss of instream and bank habitat. Operation of new facilities at Wahkiacus would introduce effluent into the Klickitat River, which could

adversely affect fish near the outfall; however, all discharges would comply with National Pollution Discharge Elimination System (NPDES) permit requirements for fish rearing. The operation of the Swale Creek intake could result in an adverse effect to rearing and spawning salmonids due to reduction in flow (habitat) in the 1400-foot reach between the intake and the mouth; however, withdrawals would only occur during higher flow months that could support hatchery diversions as well as instream flows to provide for adequate spawning, migration, and rearing of anadromous salmonids. Operation of the fish ladder at the Wahkiacus facility would result in a minor short-term delay to upstream migration for non-target anadromous salmonids. The construction of the McCreedy Creek intake would result in minor short-term loss of available instream habitat. There would be a permanent benefit to fish passage in McCreedy Creek with the removal of a culvert. Overall, the operation of the Klickitat Hatchery would remain unchanged from current conditions.

Alternative 3 would have similar environmental effects as described above for Alternative 2; however, there would be no impact to fisheries resources in the Klickitat River or Swale Creek at the Wahkiacus site because no action would be taken at that site. Also, naturally-produced juvenile spring Chinook and steelhead present in the mainstem Klickitat River downstream of the Klickitat Hatchery would continue to be vulnerable to competition with hatchery coho and, to a lesser extent, fall Chinook salmon released from the Klickitat Hatchery.

Vegetation

The Klickitat River Subbasin is located in a transition zone between cool, moist forests of the Cascade Mountains and dry, warm sagebrush steppe and grasslands to the east. Typical vegetation consists of ponderosa pine and Oregon white oak habitat with shrubs scattered in the understory. Douglas fir is also common. Along the Klickitat River, riparian vegetation is present along narrow bands that follow the stream corridor. Dominant vegetation includes stands of mountain alder and willows.

Under Alternative 1, no new construction would occur in the study areas of the three project sites and, therefore, no vegetation would be removed. Natural succession, flood events, and fire suppression efforts could cause changes in vegetation composition over time at these locations. Noxious weeds, if not managed, might spread at the sites and lower overall diversity of plant species.

Under Alternative 2, construction would have a short-term moderate impact on 8.8 acres of vegetation at Wahkiacus, 15 acres at Klickitat Hatchery, and 0.7 acres at McCreedy Creek. Construction areas with no permanent new structures would be revegetated with appropriate native plants following construction. Permanent vegetation removal at the three sites would total 5.9 acres (i.e., 2.2 acres at Wahkiacus, 2.3 acres at Klickitat Hatchery, and 1.4 acres at McCreedy Creek). Routine maintenance of the hatchery facilities would have a minor long-term adverse effect from the removal of vegetation that would typically provide nutrients to the area. An increase in vehicle traffic at the Wahkiacus and McCreedy Creek sites could disperse non-native species to these areas.

Alternative 3 would have the same environmental effects as described above for Alternative 2; however, with no action taken at the Wahkiacus site, the area of construction impact would be

lower, with a total of 15.7 acres of vegetation disturbed. Permanent vegetation removal would total 3.7 acres.

Wildlife

The Klickitat Subbasin Plan identified 365 wildlife species occurring in the Klickitat River Subbasin, including amphibians, birds, mammals, and reptiles. Yakama Nation staff familiar with the Wahkiacus site have observed wild turkey, double crested cormorant, bobcat, belted kingfisher, western gray squirrel, bald eagle, black tail deer, and numerous bird species. Tribal biologists at the Klickitat Hatchery site have documented rough skinned newt, coastal tailed frog, western toad, pacific tree frog, cascades frog, several bat species, black bear, coyote, bobcat, wolverine, striped skunk, river otter, mule deer, elk, mountain goat, Douglas squirrel, Northern flying squirrel, Townsend's chipmunk, porcupine, bushy tailed woodrat, snowshoe hare, pika, rubber boa, gopher snake, garter snakes, and numerous bird species. Common species that may occur in the McCreedy Creek study area are similar to those observed in the Wahkiacus and Klickitat Hatchery study areas.

Under Alternative 1, no new construction would occur in the study areas of the three project sites and habitats would not be altered. Existing human disturbance would continue but species that have adapted to these disturbances would continue to use the study area.

Alternative 2 would remove a total of 5.9 acres of habitat for local wildlife species during construction (2.2 acres from the Wahkiacus site, 2.3 acres from the Klickitat Hatchery site, and 1.4 acres from the McCreedy Creek site). Less mobile species such as amphibians and reptiles would experience adverse effects from construction. Construction noise from the Wahkiacus, Klickitat Hatchery, and McCreedy Creek sites would displace wildlife during construction; however, this moderate adverse effect would only occur in the short term. Operation of hatchery and acclimation facilities would have a minor long-term effect on species that are sensitive to human disturbance.

Alternative 3 would have similar environmental effects as described above for Alternative 2; however, the area of construction impact would be lower, with 3.7 acres of habitat loss, because there would be no construction at the Wahkiacus site.

Threatened and Endangered Species

Federally-listed fish species that may be present in the study areas include the Columbia River Distinct Population Segment (DPS) of bull trout and the Middle Columbia River DPS of steelhead. Bull trout use of the mainstem Klickitat River in the vicinity of the Klickitat Hatchery is likely limited to migration and foraging. No spawning is known to occur in the mainstem, and therefore juvenile rearing in the Klickitat River is unlikely. Steelhead spawning occurs in the vicinity of the existing Klickitat Hatchery, and juvenile rearing likely occurs throughout the mainstem and within Swale Creek. The Klickitat River is used as a migratory corridor for adult migration and juvenile outmigration.

The U.S. Fish and Wildlife Service has identified several terrestrial threatened and endangered species that may occur in Klickitat County. Of these, Utes ladies'-tresses could occur in the

Wahkiacus study area, northern spotted owl and gray wolf could occur in the Klickitat Hatchery and McCreedy Creek study areas, and grizzly bear could occur in the McCreedy Creek study area.

Under Alternative 1, no new construction would occur in the study areas of the three project sites and habitats or vegetation supporting threatened and endangered species would not be altered. Existing human disturbance would continue but species that have adapted to these disturbances would continue to use the study area.

Under Alternative 1, naturally-produced juvenile steelhead present in the mainstem Klickitat River downstream of the Klickitat Hatchery would continue to be vulnerable to predation and competition effects from hatchery coho and fall Chinook salmon releases from the Klickitat Hatchery. Releases of non-native Skamania stock hatchery steelhead in the Klickitat River may be affecting and continue to affect the Klickitat native populations.

The effects of Alternative 2 on federally-listed bull trout and Middle Columbia River steelhead would be similar to those described above for fisheries. The emergency-only operation of the Swale Creek intake would result in direct effects to designated critical habitat for steelhead due to flow reduction; however, the intake would only operate during high flow periods and when there is sufficient instream flow to support hatchery withdrawals while maintaining adequate habitat for migration, spawning and rearing of federally-listed steelhead, resulting in a minor, short-term effect. Construction noise generated at the McCreedy Creek site could result in a direct, short-term moderate adverse effect on a Northern spotted owl nest 0.65 mile downstream of the site.

Alternative 3 effects would also be similar to those described above for fisheries under Alternative 3, including effects to listed steelhead from coho and fall Chinook releases from the Klickitat Hatchery. With no action taken at the Wahkiacus site, designated critical habitat for steelhead would be unaffected.

Wetlands

There is one wetland at the Wahkiacus site: a 0.29 acre palustrine emergent wetland. The wetland hydrology is supplied by an artesian well at the southeast end. The Klickitat Hatchery site has several springs on the hillside north of the main complex that create slope wetlands. The slope wetlands provide limited vegetation structure and plant species richness, and interspersions of habitats is low to moderate. At the McCreedy Creek site, an approximately 3-acre palustrine, forested, seasonally-inundated wetland (also classified as a riverine wetland) is located on the north side of McCreedy Creek (Sharp 2010a). The forested wetland is dominated by cottonwood, willow, red alder, and western red cedar and hydrology is supplied by both McCreedy Creek and the Klickitat River.

Under Alternative 1, no new construction would occur in the study area at any of the three project sites and therefore no wetlands would be affected. Wetlands would continue to undergo natural processes and succession over time due to flood events and changes in vegetation and hydrologic conditions.

Construction at the Wahkiacus site under Alternative 2 would eliminate 0.29-acre of Category 3 wetland. At the Klickitat Hatchery site, erosion and sedimentation from construction activities could result in minor short-term adverse effects by decreasing water quality and habitat availability to slope wetlands associated with Indian Ford and Wonder Springs. In the long term, these slope wetlands could be lost and converted to upland as site upgrades alter surface water patterns. Replacement of a culvert with a bridge at McCreedy Creek at the McCreedy Creek site could lead to erosion and sedimentation and cause a minor short-term decrease in water quality and habitat availability in the nearby wetland.

Alternative 3 would have the same environmental effects as described above for Alternative 2; however, because there would be no construction at the Wahkiacus site, the 0.29-acre Category 3 wetland would be unaffected.

Floodplains

The majority of the Wahkiacus site is outside of the designated floodway; however a portion of the site is within the designated floodway fringe of the Klickitat River. Swale Creek is capable of conveying its 100-year flood flow within its existing bank and levee system floodplains. The Klickitat River floodplain closely follows the river banks through the Klickitat Hatchery site. McCreedy Creek is semi-confined with available floodplain on the left bank, and steep slopes on the right bank that restrict the floodplain.

Under Alternative 1, no new construction would occur in the study area at any of the three project sites and therefore no floodplains would be affected.

Alternative 2 would involve new construction and there would be change in flow characteristics to affect floodplain hydrology at upstream or downstream locations near the Wahkiacus, Klickitat Hatchery, or McCreedy Creek sites.

Under Alternative 2, the intake and pump station for the Wahkiacus facility would be within the Klickitat River floodway as identified by the Federal Emergency Management Administration. Several facilities associated with the Wahkiacus site would be located in the floodway fringe portion of the floodplain, but the site would be designed to cause no rise in flood elevation. Impacts to floodplains are not anticipated at the Klickitat Hatchery site or McCreedy Creek site.

Alternative 3 is not anticipated to have impacts to floodplains at the Klickitat Hatchery or McCreedy Creek sites.

Cultural Resources

The three study areas are located within the homeland of the Klickitat band, *Ichi Skiin Sinwit*, which is now part of the Yakama Nation. The Wahkiacus study area is said to have been an important fishing area to Yakama Nation people and is culturally rich with resources. Additionally, the project area overlaps with a segment of the Columbia River – Northern Railroad. Both the railroad and the archaeological site have been determined eligible to the National Register of Historic Places. No archaeological resources or traditional cultural

properties have been identified at the Klickitat Hatchery site; however, four historic structures, including the existing hatchery building and three residences, were identified as potentially eligible to the National Register of Historic Places. The McCreedy Creek site has not been surveyed for cultural resources.

Under Alternative 1, no new construction would occur in the study area at any of the three project sites and therefore no cultural resources would be affected. Cultural resources would remain undisturbed, and salmon production would not significantly increase and tribal ceremonial and subsistence use of this traditional cultural resource would likely be unchanged from current conditions.

Under Alternative 2, the renovation of the existing historic Klickitat Hatchery and demolition of three existing historic residences would have an adverse effect. Due to their age and architectural style, these four structures are potentially eligible to the National Register. Removing elements of architectural importance or completely demolishing them would adversely affect the historical integrity of these structures. Additionally, under Alternative 2, the ground disturbance related to constructing the Wahkiacus Hatchery and Acclimation Facility could adversely affect the present subsurface cultural materials.

Further evaluation of the proposed project area is needed prior to determining the impacts of Alternative 2 at the McCreedy Creek study area. Surveys will be completed in summer of 2011, prior to the Final EIS. If cultural materials are identified within this study area, it is possible that the project could have an effect on them.

Under Alternative 3, hatchery and production actions would be focused at the modified Klickitat Hatchery. If necessary, an acclimation facility would be developed at McCreedy Creek as described in Alternative 2. Impacts would be the same as those under Alternative 2, except that no construction would occur at Wahkiacus and the subsurface cultural materials present there would not be affected.

Aesthetics

The three project sites are in rural and relatively undeveloped settings along the Klickitat River. The Wahkiacus site is adjacent to transportation corridors, including a state highway, a county road, and the Klickitat Trail, which is managed by the Washington State Parks and Recreation Commission. Views of the existing structures are generally limited by the presence of vegetation. At Klickitat Hatchery existing structures, mixed conifer forest, and riparian streamside vegetation frame the site. The McCreedy Creek site is a forested meadow with a gentle slope toward the Klickitat River. The surrounding area is primarily forest land with some active harvest occurring. The three sites are located in areas of low to no residential development or other sensitive noise receptors.

Alternative 1 would not involve any construction, ground-disturbing activities, or alteration of the Wahkiacus, Klickitat or McCreedy sites. Therefore, the viewshed would not change at the site. The sites would remain in their current state and aesthetic resources would be unaffected.

Alternative 1 would also result in no new noise-generating activities at any of the three sites and normal ambient background noise would continue.

Construction associated with Alternative 2 would alter the rural setting at the Wahkiacus and Klickitat Hatchery sites and would result in short-term moderate adverse direct impacts. New structures at the Wahkiacus site would constitute a moderate long-term adverse impact. Partial removal of the concrete sill at the Klickitat Hatchery site would improve the aesthetic condition. There would be no sensitive viewers present at the McCreedy Creek site during the acclimation season (i.e., when the mobile facilities are in place) and, therefore, the viewers would not be affected by the seasonal change in conditions at the site.

Construction under Alternative 2 would result in moderate short-term noise impacts in areas directly adjacent to construction activity. Residents located approximately 0.25 mile from the Klickitat Hatchery site may experience some short-term minor impacts from elevated noise levels. Operation under Alternative 2 is not expected to exceed the Washington Administrative Code WAC maximum environmental noise level and would only constitute a minor effect to surrounding areas. Construction and operation of the McCreedy Creek site is not expected to result in noise impacts, as the nearest off-site residences are located well over 0.25 mile from the site.

Alternative 3 would have the same effects to the visual environment and soundscape as Alternative 2; however, there would be no impacts associated with the Wahkiacus site, as it would not be constructed under Alternative 3.

Socioeconomics

The three project sites are located in rural areas surrounded mostly by open space and undeveloped lands. The Yakama Nation Fisheries field station at Wahkiacus provides a base of operations for habitat enhancement projects and fish monitoring, among other activities. The Klickitat Hatchery is an operating hatchery complex. The McCreedy Creek site, the most remote of the three sites, is located in the closed area of the Yakama Nation Reservation and available for the exclusive use of tribal citizens as a primitive campground. Transportation networks provide access from state highways, county roads, and in the case of McCreedy Creek, reservation roads. Economic activities and primary industries in Klickitat County and on the reservation are diverse, including agriculture and food processing, forest products, transportation and warehousing, manufacturing, recreation and tourism, health care, and the service-sector industries. Subsistence fishing by the Yakama Nation occurs year round and targets all stocks of salmon and steelhead. Recreation activities occur on the Klickitat River and on the Klickitat Trail, adjacent to the Wahkiacus site.

Under Alternative 1, no new construction would occur in the study area at any of the three project sites. Current land use at the Wahkiacus site, the Klickitat Hatchery site, and the McCreedy Creek site would continue. No change in land use or access for local transportation corridors is expected. Economic conditions in the region would not change from the existing conditions as no new construction would be undertaken and no additional jobs would be created. Employment associated with the Klickitat Hatchery would be consistent with current

operational levels. Also under Alternative 1, current recreational opportunities and access would continue at existing levels and locations.

Construction within and adjacent to the Klickitat River associated with Alternative 2 would have a minor direct impact to land use at the Wahkiacus and Klickitat Hatchery sites. These actions would require permits from the county and tribe. Short-term traffic delays would be anticipated at the three project sites due to construction trucks and construction worker vehicles accessing the sites. Construction and operation of Alternative 2 would result in a direct short-term beneficial impact on employment in the local and regional economy. Up to five new permanent jobs would be available at the Wahkiacus site and a temporary/seasonal job would be available at the McCreedy Creek site. Though there could be a short-term interruption of subsistence fishing during construction, there would be an overall benefit to subsistence fishing by improving the availability of fisheries resources.

Construction of the Wahkiacus Hatchery and Acclimation Facilities and residential sites would result in short-term interruptions for Klickitat Trail users and recreation on the Klickitat River at the Wahkiacus site. Vehicle access to residences south of the hatchery facilities would cross the Klickitat Trail and create a minor long-term risk to trail users. At the Klickitat Hatchery site, partial removal of the concrete sill would improve non-motorized boat use of the river. Construction and operation of the McCreedy Creek Acclimation Facility would result in discontinued tribal use of the site for recreation at this location.

The construction and operational effects associated with Alternative 3 would be similar to those described under Alternative 2; however, there would be no impacts associated with the Wahkiacus site because no action would be taken at that site under Alternative 3.

Public Health and Safety

A combination of tribal, state, and county agencies provide public health and safety resources for the Klickitat River basin area. Most of these resources can be accessed through the Klickitat County Sheriff's office or the Yakama Nation Tribal Police Department, depending on the location.

Implementing Alternative 1 would not result in elevated health or safety risks to the public or hatchery workers. Under this alternative, no new safety or security measures would be warranted. Klickitat County and tribal emergency services could be necessary at the same level as is currently experienced.

Alternative 2 would result in minor short-term adverse effects directly related to increased risk of injury from construction activities. Operational safety risks at the Wahkiacus, Klickitat Hatchery, and McCreedy sites would be the same as for similar hatchery facilities.

The construction and operational effects associated with Alternative 3 would be similar to those described under Alternative 2; however, there would be no impacts associated with the Wahkiacus site because no action would be taken at that site.

Chapter 4: Consultation, Review, and Permit Requirements

The proposed project is evaluated to ensure compliance with the following federal laws and requirements:

- National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq.)
- Endangered Species Act of 1973, as amended (16 USC 1531 et seq.)
- Fish and Wildlife Coordination Act of 1934 (16 USC 661 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Act of 1976. (Public Law 104-297)
- Migratory Bird Treaty Act (16 USC sections 703-712, July 3, 1918, as amended)
- Bald and Golden Eagle Protection Act (16 USC 668-668d, June 8, 1940, as amended)
- National Historic Preservation Act of 1966 as amended (16 USC 470)
- Executive Order 1988 (Floodplain Management)
- Executive Order 11990 (Protection of Wetlands)
- Farmland Protection Policy Act
- State Environmental Policy Act
- Clean Water Act of 1977 (33 USC 1251 et seq.)
- Noise Control Act of 1972 (42 USC 490 et seq.)
- Clean Air Act of 1970 (42 USC 741 et seq.)
- Resource Conservation and Recovery Act (42 USC 692 et seq.)
- Toxic Substances Control Act (15 USC 2601)
- Insecticide, Fungicide and Rodenticide Act (7 USC 136 et seq.)
- Executive Order 12898 (Environmental Justice)

Various other tribal, state and county requirements to be met prior to initiating this project include land use and building permits and in-water work permits.