Northeast Oregon Hatchery Program
Grande Ronde - Imnaha Spring Chinook Hatchery Project

Supplement to Biological Assessment

March 2006

Prepared for:
U.S. Department of Energy
Bonneville Power Administration
And
Nez Perce Tribe

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Table of Contents

Tables

Figures

1.0 Introduction

In May 2004, FishPro, a division of HDR (now HDR/FishPro) completed a Biological Assessment (BA) for the Northeast Oregon Hatchery (NEOH) Project for the Bonneville Power Administration (BPA) and the Nez Perce Tribe (NPT). The BA discussed impacts to species listed under the Endangered Species Act (ESA) due to construction, operation, and maintenance of anadromous fish (spring/summer Chinook) production facilities considered part of the NEOH Project.

The BA was completed in May 2004. Subsequent Biological Opinions (BOs) were issued July 2004 by the U.S. Fish and Wildlife Service (USFWS; File No. 1-17-04-F-0385[8330.03853 (04)]; TS No. 04-2941) and October 7, 2004 by the National Oceanic and Atmospheric Administration (NOAA) – Fisheries (NOAA Fisheries No.: 2004/00615). Since the BOs were issued, several changes have occurred to the project design and proposal. These changes represent design modifications as the project has moved forward into final design in preparation for Step 3 Review by the Northwest Power and Conservation Council (Council). Step 3 Review is currently scheduled to occur in early 2006, and funding for construction of the project elements is anticipated to be awarded at that time.

This document represents a supplemental analysis to the BA previously submitted to the USFWS and NOAA Fisheries (Services) to update project reviewers on design changes and anticipated impacts those changes may have on listed species. In addition, this document considers updates to the critical habitat listings for Columbia River bull trout (*Salvelinus confluentus*) and for Snake River steelhead (*Oncorhynchus mykiss*) and recommends effect determinations for those designated habitats. The project has previously undergone formal ESA consultation (effect determination for all listed anadromous species was Likely to Adversely Affect); proposed project changes do not affect this determination and are not anticipated to result in impacts that exceed the level of take previously authorized in the BOs prepared for this project.

2.0 Project Purpose and Listed Species Review

The NEOH Project was developed from a Master Plan that proposed actions to modify and modernize existing hatchery facilities and to build an auxiliary hatchery facility in northeast Oregon to mitigate and aid in the conservation and recovery of threatened Snake River spring/summer Chinook native to the Grande Ronde and Imnaha River Basins. The BA, submitted in May 2004 in compliance with Section 7 of the ESA, as administered by the USFWS and NOAA Fisheries, addressed the following species that were indicated to potentially occur in the vicinity of the proposed project areas (Table 1).

Table 1. Listed Species and Critical Habitat that have potential to occur in NEOH Project Area

Common Name	Scientific Name	Federal Status	Critical Habitat
Canada lynx	*Lynx canadensis*	Threatened	Proposed (2005); however, project area not included
Bald eagle	*Haliaeetus leucocephalus*	Threatened	None
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	NA
Columbia River bull trout	*Salvelinus confluentus*	Threatened	Designated (2005)
Snake River Chinook salmon (spring, summer and fall)	*Oncorhynchus tshawytscha*	Threatened	Designated (1993, revised 1999)
Snake River steelhead	*Oncorhynchus mykiss*	Threatened	Designated (2000, re-designated 2005)
Columbia spotted frog	*Rana luteiventris*	Candidate	NA
Slender moonwort	*Botrychium lineare*	Candidate	NA
Macfarlane's four o'clock	*Mirabilis macfarlanei*	Threatened	None
Spalding's catchfly	*Silene spaldingii*	Threatened	None
Howell's spectacular thelypody	*Thelypodium howellii* spp. *spectabilis*	Threatened	None

3.0 New Information or Changes since BOs Issued

Changes made to the design of elements of the proposed NEOH project have occurred primarily in response to the challenges faced during the final design process. During the course of final design, construction and operational costs, operational safety issues, impacts to adjacent land owners, land procurement, and impacts to habitat have been further evaluated and designs modified in response to specific site components. The design modifications include changes to facility infrastructure, proposed sites and water usage scenarios. Changes pertaining to each project component, if any, are presented below, following a brief description of the project element as presented in the original BA.

3.1 Lookingglass Hatchery

The Lookingglass Hatchery is an existing facility that has been in operation since 1982. Proposed modifications to the facility as presented in the BA were relatively minor and mainly limited to upgrades to the electrical supply system.

A decision was made by the managers and owners of this facility to complete upgrades and remodel activities separate from the NEOH project. Therefore, this site and actions taken for facility improvements are no longer an element of this consultation.

3.2 Proposed Lostine Adult Collection Facility

To collect adult spring/summer Chinook for hatchery broodstock, fisheries managers currently use a portable weir (Wolfe Trap) on the Lostine River near its confluence with the Wallowa River. Although this weir functions adequately during most flows, it is still unable to capture 100% of the run of Chinook during high flow events, therefore restricting the number and genetic variety of adults collected. To provide the capability of collecting broodstock over the entire flow regime, a new collection facility, named the Lostine Adult Collection Facility (LACF) was proposed in the BA. This weir was to be located approximately one mile south of the town of Lostine, downstream of historic spring/summer Chinook spawning areas. The new facility was designed to operate effectively during higher flows (800 – 1,200 cubic feet per second [cfs]); the existing Wolfe Trap was to continue to be used during lower flow periods.

In brief, construction of the proposed LACF would have involved extensive in-water work including:

- dismantling of portions of an existing concrete fish ladder,
- installation of new flow velocity barrier (requiring construction of concrete abutment walls, extensive bank removal, and riparian vegetation removal),
- construction of a flood-proofing levee using fill and riprap along approximately 360 feet (ft) of the river channel,
- construction of a temporary access road and a permanent gravel road,
- replacement of an existing bridge, and
- addition of new electrical service.

Due to land acquisition constraints, the LACF was eliminated from the NEOH project. Elimination of this component subsequently eliminates all impacts related to the extensive in-stream and riparian work proposed at this location. However, the need for safe and effective adult collection during high flows still exists. To mitigate for the loss of function that was to be provided by the LACF, a fishway/ladder is proposed to be constructed at the Lostine River Hatchery (see Section 3.3 for details). It is anticipated that the existing Wolfe Trap will need to be improved to enable the structure to withstand higher flows and provide enhanced safety conditions for personnel operating the weir. Weir improvement designs have not been developed, but will likely include more permanent in-stream structures, possibly including concrete abutments, capable of withstanding higher flows to provide for more efficient collection across the run.

Modifications to the Wolfe Trap are considered likely to occur, but design details are not known at this time, so it is premature to speculate on their effects. When details are known they will be consulted on independently for compliance with Section 7 of the ESA. However, modifications are considered an interrelated/interdependent action for this supplemental BA.

One component of the proposed LACF was the development of a fish ladder through which all river water would have flowed during extreme low flow periods. Existing low flow conditions at this site hinder passage for most salmonid species and the ladder was intended to improve passage by providing an artificial "channel" through which all species could migrate upstream and downstream. Elimination of the LACF from the NEOH project would no longer alleviate the existing passage problem. However, this passage issue is not the result of any actions by the project proponents. However, BPA and the NPT are currently investigating ways to address the passage issue at the abandoned LACF as an effort independent of the NEOH project.

3.3 Lostine River Hatchery

3.3.1 Original Site Plan

As presented in the original BA, construction of the proposed Lostine River Hatchery is to occur on an approximately 6-acre site located near the Lostine River Acres residential community, approximately 5 miles upstream (south) of the town of Lostine. Construction of facilities as originally proposed would have resulted in the addition of approximately 1.9 acres of impervious surface at a currently undeveloped site. The site was to be graded and filled with 5,000 to 6,000 cubic yards (cy) of rock from a nearby quarry to level the site in preparation for facility construction and to provide flood protection for the hatchery facility.

The original site plan included numerous structures as shown in Figure 1. As described in the BA, construction would require the removal of numerous large trees, primarily grand fir (*Abies grandis*), Englemann spruce (*Picea englemannii*), and black cottonwood (*Populus balsamifera*). A small number of diseased trees, snags and downed wood would also be removed from this area. Bank armoring with riprap was proposed for the existing meander side channel, near the southwest corner, to protect the hatchery facility from high water events that may cause bank erosion. Three new groundwater wells were proposed to provide 1,200 gallons per minute (gpm) for facility operations.

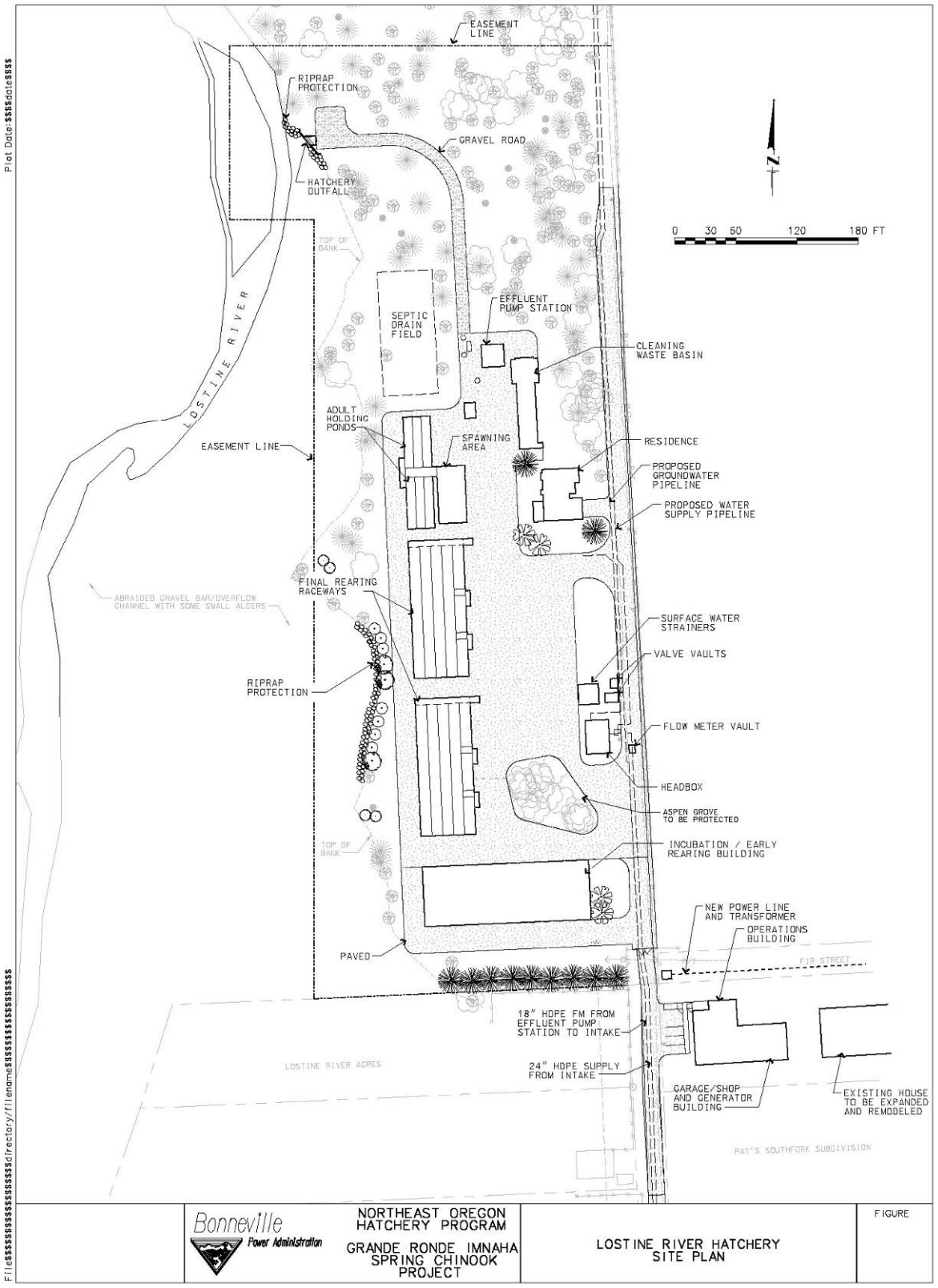

Figure 1. Lostine River Hatchery Site Plan as Proposed in Original BA.

3.3.2 Proposed Changes to Site Plan

Design changes to the proposed Lostine River Hatchery site are the most extensive of all the NEOH facilities. Changes are presented below in three categories: upland site component changes, streambank & instream component changes, and operational changes (adult collection, low flow water usage and pumpback criteria).

Upland Site Component Changes

Facility Site Plan

In general, the new site plan (Figure 2) contains similar components to those presented on the original site plan; however, several structures have been shifted to the north or relocated throughout the hatchery easement. Although the basic construction area remains the same, the amount of new impervious surface has been increased from 1.9 acres in the original proposal, and is now approximately 2.8 acres.

The new design has several components located in an area that was previously planned to include only an access road to the outfall structure. The outfall structure is now proposed to be replaced with a fishway/outfall. Associated structures including a spawning building and adult holding ponds will be located on the northern end of the parcel. The spawning building is sited on the northern portion of the parcel to allow gravity flow though the hatchery and minimal fishway length.

A centrifugal sand separator to remove sand particles from the surface water supply is added. The sand separator will be operated during high river flows. Sediment from the separator will be mixed with facility's effluent flow and discharged at the same dilution as is in the river.

Finally, a stormwater conveyance and treatment system has been designed. All runoff will be routed to a drain in the center of the site and directed to an oil/water separator and then to a bioswale to be constructed in uplands near the northern portion of the site.

The northern end of the site contains numerous mature trees. So, construction per the new site plan will result in more tree removal. Still, mature trees will be protected where possible. And, no trees would now be removed where the LACF was proposed. Elimination of the LACF site and subsequent tree removal associated with site development will likely balance the additional tree removal needed on the northern parcel of the hatchery site.

Slope Protection

The bank stabilization technique along the western portion of the facility has been modified. Instead of using riprap, large trees will be anchored to the slope and native shrubs will be planted to reinforce the bank (see Figure 2, slope protection area lined with downed trees). This bioengineering activity will occur above the Ordinary High Water Mark (OHWM) during the summer to prevent potential sedimentation into the meander channels at the toe of the slope. These channels are generally dry during the summer, so no impact to aquatic species is anticipated from this activity.

Juvenile Release Pipeline

The original proposal had juvenile fish routed to an outfall located at an existing side channel of the river. Installation of this outfall would have involved disturbance to meander overflow channels of the Lostine River. The Oregon Department of State Lands prefers that disturbance of these channels be avoided. So, a buried pipeline is now proposed to route juvenile fish from the rearing raceways to the fishway, and then to the river. The pipe will be buried within areas proposed for gravel surfacing and will result in no additional disturbance to upland habitat. The pipe will be sized to ensure the safe passage of fish into the fishway. The fishway step heights will be lowered by placing additional damboards in the ladder to ease smolt entry into the river. Flows down the ladder will be adjusted if necessary to allow safe release of smolts. During release, a portable (removable) grate with one-inch bar spacing will be placed at the fishway entrance to prevent entry of river fish or predators.

House Remodeling

The BA proposed to remodel the existing BPA-owned house located across Granger Road from the proposed hatchery. It has been determined that new construction is more cost effective than remodeling. The new residence will be a 2,200 square foot single story home with an attached garage. Due to the configuration of the existing residence with the large detached garage, the new residence can fit within the same footprint as the existing house. The existing house is a doublewide, so it could be lifted from its foundation and moved to another location. If relocation is not possible, demolition will occur. Removal or demolition will occur on uplands and will not require any tree removal. Vegetation to be cleared for construction of the new residence consists primarily of weedy upland plants that do not provide habitat for listed species or high value habitat for local wildlife species. All demolition spoils will be removed from the site and taken to an approved upland location.

Well Vaults

Small (4 foot by 4 foot) concrete vaults will be buried adjacent to each hatchery well to house valves and operational equipment. The BA describes pitless adapters.

Groundwater Well Development

As described in the BA, three wells will provide groundwater to the facility. These wells have already been drilled as test wells. In October 2005, an aquifer pump test was conducted at the primary production well. This test predicted relatively low yield from one of the test wells. Based on these test results, one of the wells previously proposed for hatchery use will no longer be utilized. To replace the low yielding well, a new well is proposed to be drilled in February 2006. This well will be located within the hatchery easement, likely along the western perimeter near the proposed adult holding ponds/spawning building.

Another modification to groundwater development is an increase in the groundwater budget from a maximum of 1,200 gpm to 1,450 gpm. This increase is attributed primarily to the fine tuning of de-icing water needs at the intake structure, as well as added flow for the operation of a fish marking trailer. Table 2 shows the groundwater budget for the facility by month. As can be seen in the table, maximum withdrawal only occurs during the month of February. All other months will require groundwater at levels below the maximum withdrawal rate discussed in the BA. Groundwater right applications have been filed with the Oregon Water Resources Department and are currently under review. More details related to ground and surface water requirements for the facility are presented in the *Operational Changes* section, presented later in this document.

Table 2. Groundwater Usage (gpm) Per Month at the Lostine River Hatchery

Well Use	**Month**											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Incubation	210	210						210	210	210	210	210
Early Rearing		900	900	900	900	900	900	900				
De-icing	325	325									325	325
Marking								40				
Domestic	15	15	15	15	15	15	15	15	15	15	15	15
Total	**550**	**1450**	**915**	**915**	**915**	**915**	**915**	**1165**	**225**	**225**	**550**	**550**

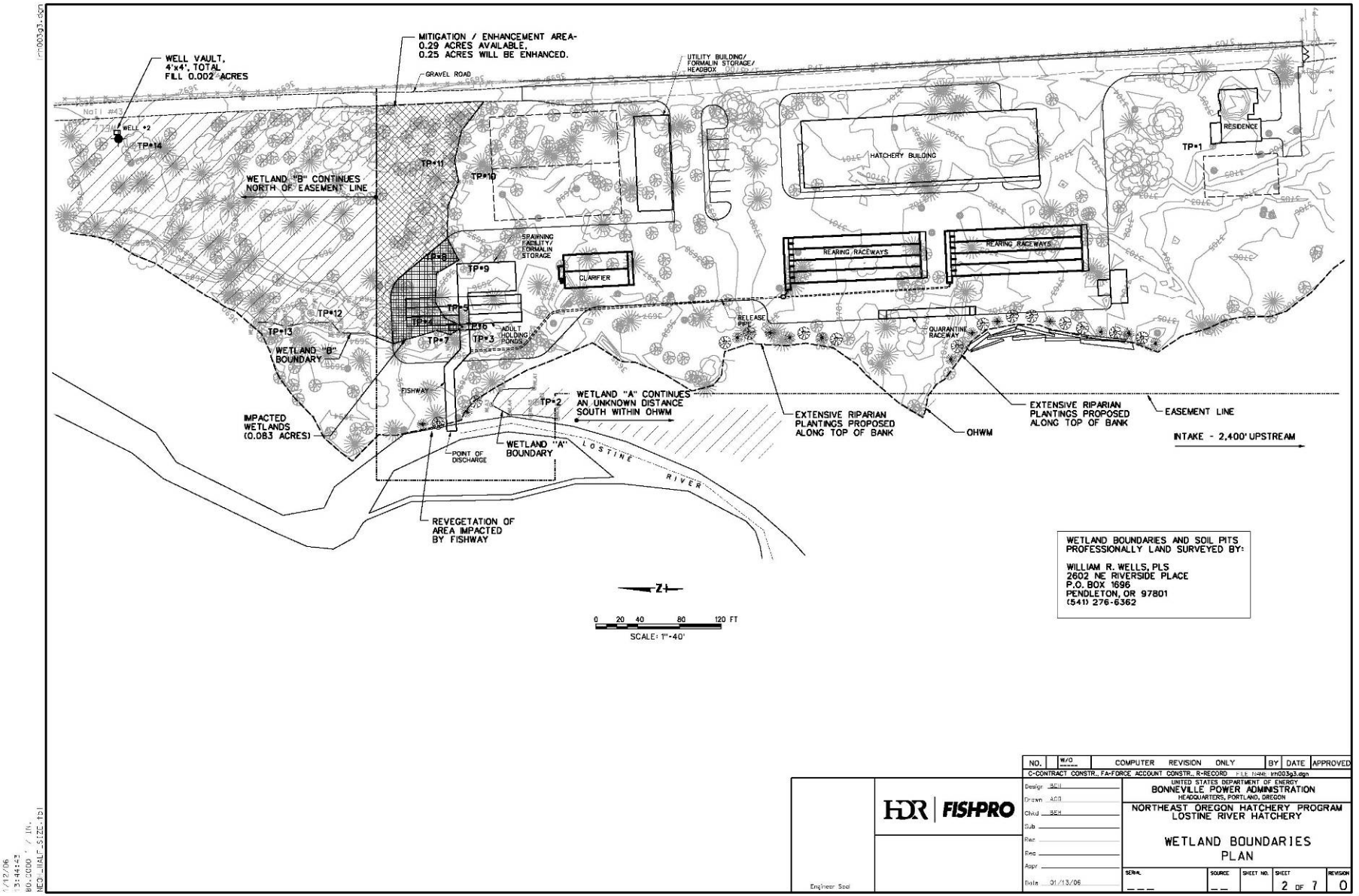

Figure 2. Current Lostine River Hatchery Site Plan.

Intake Pipeline and Access Road

Due to the relocation of the intake structure (described in the next section - *Streambank and Instream Component Changes*), the associated intake access road and pipeline corridor have also been relocated (Figure 3). The newly designed access road (12 ft wide) will require the removal of approximately 0.05 acres of upland vegetation, primarily herbaceous grasses within a privately owned easement (leased to BPA for the development and use of the intake and associated infrastructure; see photo of area in Appendix A). The access road will be routed around mature trees to avoid their removal. The buried 24-inch diameter gravity pipeline that will convey surface water from the intake to the hatchery site will traverse private property until the junction with Granger Road. The pipeline will be buried immediately adjacent to Granger Road on the western side of the road easement. Because the pipeline will no longer be buried beneath Granger Road (to avoid access impacts to local residents during formerly proposed road improvements), the road is no longer proposed for paving and will remain in its current condition and configuration. The BA stated that approximately 10 mature trees that currently line Granger Road were to be removed during installation of the pipeline and subsequent roadway improvements. Installation of the pipeline immediately west of the road should not result in additional tree removal.

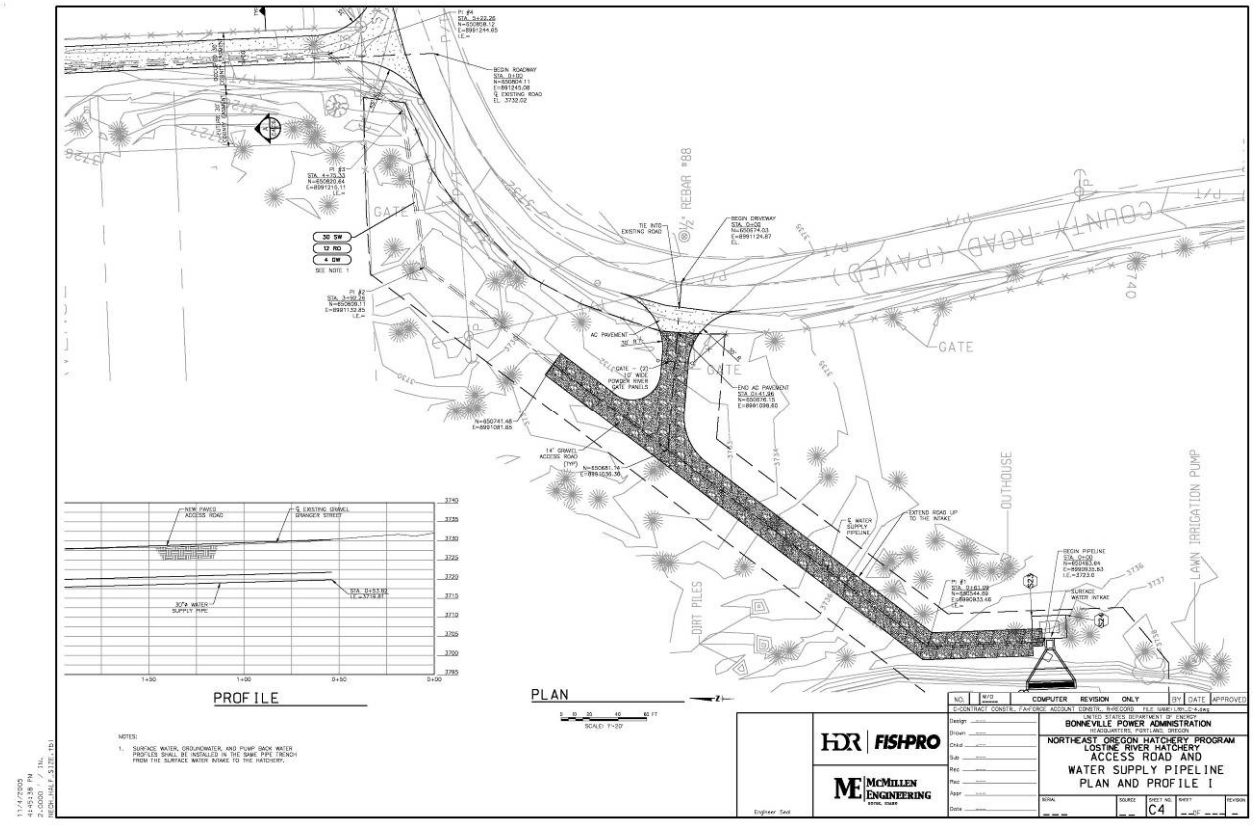

Figure 3. Intake Access Road and Surface Water Pipeline Corridor.

Streambank and Instream Component Changes

Construction and installation of in-water structures will be as described in the original BA, utilizing similar types and sizes of cofferdams. Although construction could potentially be completed during one in-stream season under an ambitious work schedule, it is conservatively estimated that construction will take place over two seasons during the instream work window (July 15 – August 15) recommended by ODFW. This two-season in-water work schedule was discussed in the original BA. Although detailed construction schedules will be determined by the contractor, it is anticipated that during the first season the intake structure and

eastern half of the concrete sill will be installed. In the second instream work season, the western half of the buried sill and the associated rock weir will be installed. The hatchery fishway/outfall will be constructed during the first or second season, depending on construction staffing and progress.

Surface Water Intake

The surface water intake structure as originally proposed is shown in Figure 4. The intake was originally sited approximately ½ mile south of the hatchery parcel, just upstream of the County Bridge, and was designed to supply up to 17.8 cfs to the facility. The intake facility was to include a cast-in-place intake on the east bank of the river, a pneumatically-operated weir to control the water surface elevation, a fish ladder for passage, a sluiceway for periodic downstream sediment transport past the weir, a log boom to protect the screen panels and a compressor building to house the air receiver and compressor. An air system was proposed to provide air burst cleaning to the screen panels and to inflate the pneumatically-controlled weir.

Installation of the intake, fish ladder, sluiceway and conveyance pipeline would have resulted in the removal of approximately 100 ft of the riverbank and associated riparian vegetation. Construction of the compressor building and access road was to remove approximately 0.06 acres of riparian vegetation, including one or two mature black cottonwoods, and several saplings and shrubs. River cobbles were to be placed instream at the intake structure to stabilize the intake and minimize sedimentation.

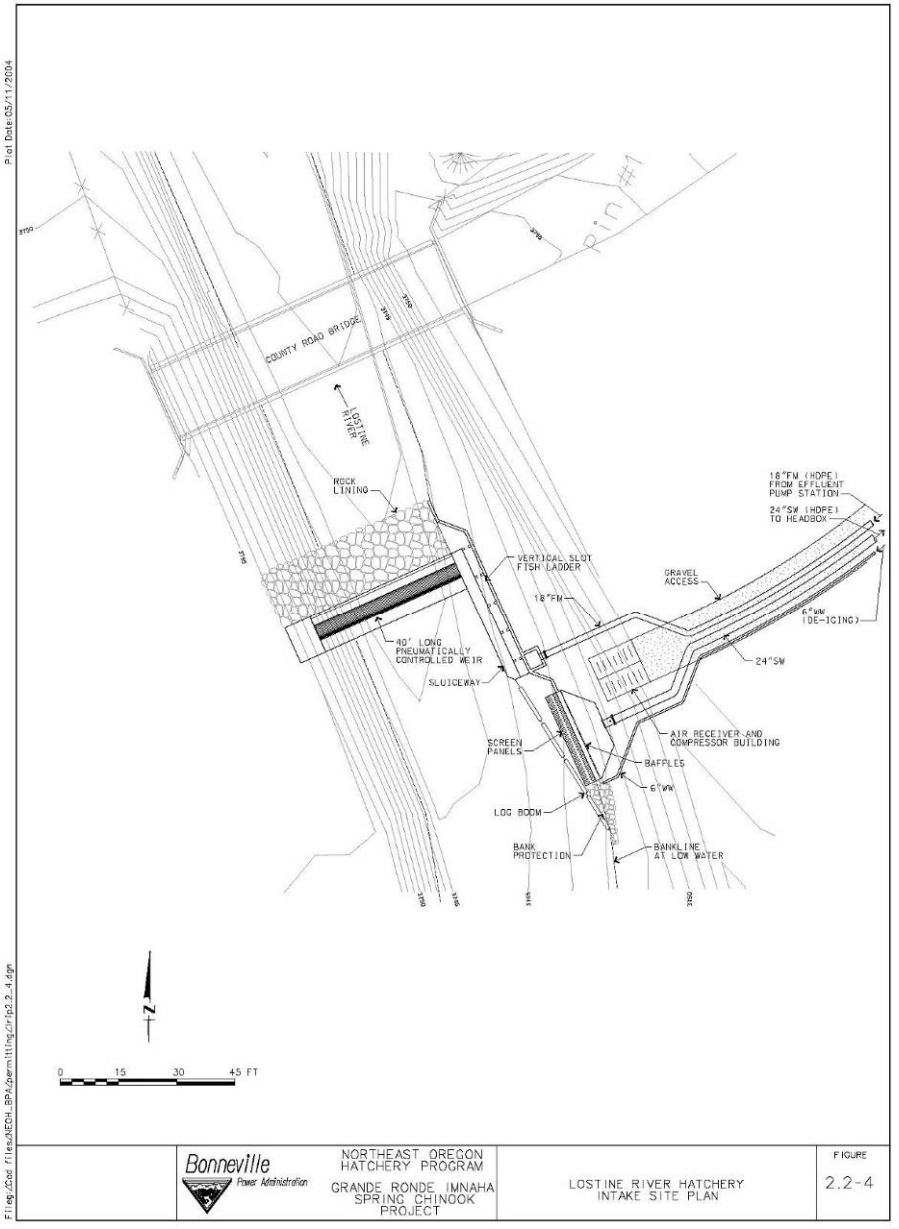

Figure 4. Lostine River Hatchery Intake Site Plan as Proposed in the BA.

Due to property acquisition issues and design constraints relating to construction, the location of the proposed intake has been moved approximately 400 feet downstream from the location identified in the BA. This relocation reduces the diversion reach affected by hatchery surface water withdrawals. Photos of the new intake location are included in Appendix A, photos A-1 and A-2. The river reach in the new location is more constricted than the previous location and the substrate is characterized by large cobbles and small boulders. The new intake structure has been redesigned (see Figure 5) to supply up to 18.0 cfs to the hatchery (surface water requirements are 16.7 cfs; however, redesign takes into account a buffer factor for an intake screen). Elements of the new intake are:

- Buried concrete sill spanning the river

- Rock weir positioned on the buried sill
- Cast in place intake structure (approximately 30 ft long extending 8 ft from bank) equipped with NOAA-approved screens
- De-icing pipeline outlet just upstream of intake screens (outlet screened to prevent fish entry)
- Water pumpback pipeline outlet just downstream of intake screens (outlet screened)
- Buried vault housing air burst cleaning system and low pressure air bubbler system

A buried concrete sill is proposed to span the river and serve as substrate onto which the rock weir will be positioned. This sill was recommended by NOAA Fisheries Engineer, John Johnson during an October 2005 site visit (pers comm., 10/05); conceptual designs for the intake structure were also approved by Mr. Johnson during the site visit. It should be noted that the verbal approval is conditioned upon review of final engineering plans. The rock weir will route water to the intake screens. During normal or high flow events, the river will top the rock weir, allowing fish passage. During low flows, a three-foot opening in the weir adjacent to the right bank will provide fish passage.

As with the previous design, the surface water intake will be a cast-in-place concrete structure located on the right (east) bank of the river. The intake structure will be screened to meet NOAA Fisheries criteria. Although specific construction methods will be determined by the construction contractor, it is anticipated that installation of the intake facility will occur in two phases. If both phases cannot be accomplished in one in-water work window, completion of the intake installation will occur the following year. The first phase will entail installation of the eastern half of the buried concrete sill and excavation and bank work for installation of the intake structure. The sill will consist of manufactured sections of concrete approximately 1.5 ft wide and 2.5 ft high. Installation of the sill and intake will be accomplished in the dry behind a cofferdam and will require the use of a dewatering system. The cofferdam described in the original BA was a cellular type (i.e. driven sheetpiles) 150-170 ft long, and 12-15 ft wide. However, because this intake has a much smaller area of construction (no fish ladder), the cofferdam will be smaller, likely no more than about 50 ft long and 30 ft wide. And, due to substrate composition in this area, a cellular cofferdam is not practical. Instead, a cofferdam consisting of sand bags and ecology blocks is proposed. The exterior of the cofferdam will be covered in plastic sheeting to ensure a water tight seal. Cofferdam materials will be installed using a crane positioned on the eastern bank of the river. During eastern bank work, fish passage will be maintained in the western half of the river. Approximately 40 ft of the riverbank will be removed during construction of the intake structure (in comparison to 100 ft of bank removal anticipated with the original intake design). The cofferdam will be removed upon completion of the intake and eastern sill portions. Removal will occur incrementally to reduce downstream sedimentation.

During the second instream work window (if necessary), the western half of the buried concrete sill will be installed in the dry utilizing a plastic liner and ecology block cofferdam (30 ft long by 30 ft wide). Large boulders will be placed atop the buried concrete sill to form the rock weir.

Following installation of the instream intake structure, excavation will take place above the ordinary high water mark east of the river in order to install a buried concrete vault. This vault will be flush with the ground and will house the air burst cleaning system associated with the new intake facility. Following intake installation, the structure will be covered with river rock and backfilled with excavated bank materials. Housing the air burst cleaning system in a buried concrete vault should effectively muffle its noise.

The proposed installation of the intake facility as described above is almost identical to the proposed construction method described in the BA for the original intake.

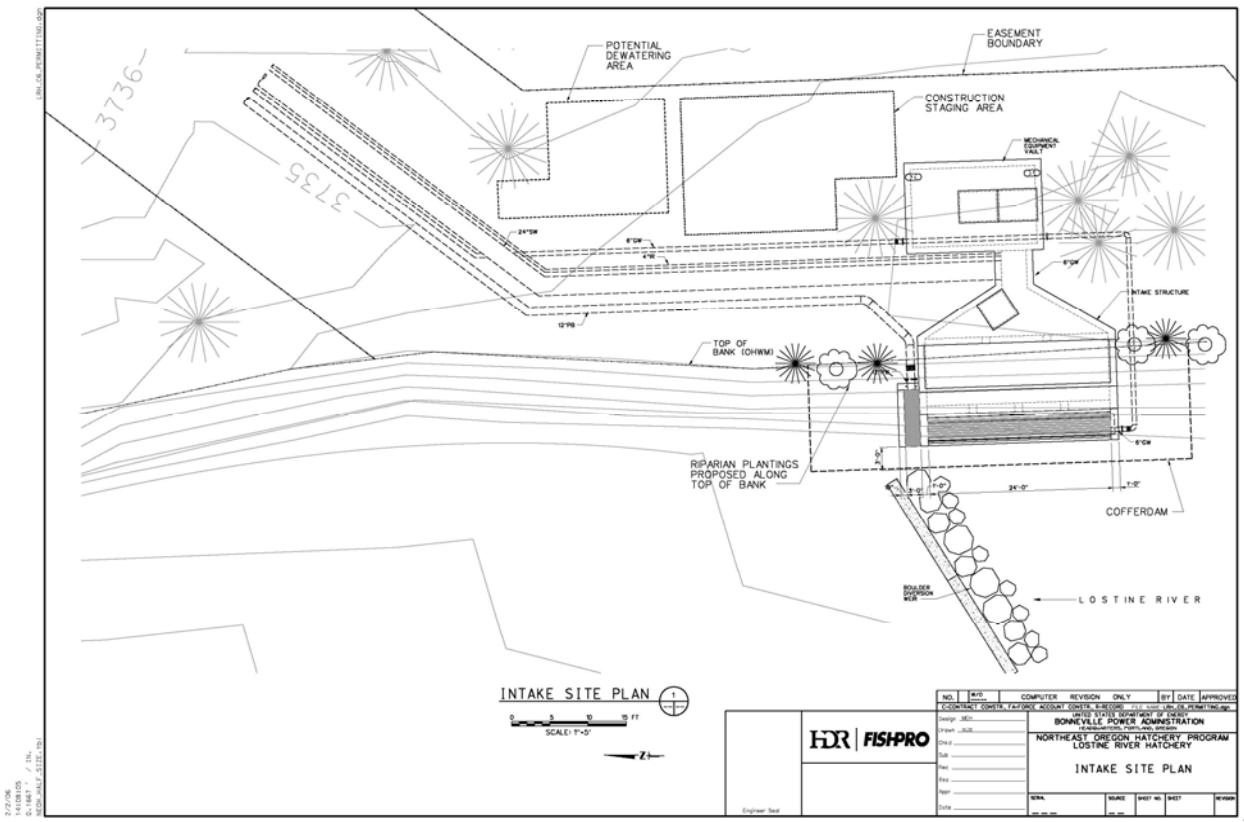

Figure 5. Newly designed Lostine River Hatchery intake structure.

New Fishway/Outfall Structure

As originally proposed in the BA, construction and subsequent maintenance of the hatchery outfall structure was to require the excavation of approximately 150 cy of bank material and removal of associated woody riparian vegetation, including a limited number of trees. Approximately 35 cy of river cobbles were to be placed around the outfall to stabilize the structure and prevent erosion and sedimentation.

As discussed previously, to mitigate for loss of the high flow adult collection capability that the LACF was to provide, a fishway is now proposed in the vicinity of the original hatchery outfall location. This fishway will be combined with the outfall to limit impacts to the streambank during construction. The fishway will be a pool and step ladder (with one foot drops; Figure 6) approximately 102 feet long that will route fish that enter the ladder into a trapping/sorting area. During the initial years of operation, the trapping facility will be visually inspected daily; non-target fish will be held for no longer than 24 hours before being returned to the river. Trapping procedures are discussed in greater detail in the *Operational Changes* section later in this document.

For construction of the fishway/outfall structure, the following materials and equipment will be required:

- Ecology Blocks and plastic liner
- Sand bags and silt fencing
- Two 36-inch corrugated metal pipe (CMP) standpipes 6 feet tall
- Two dewatering pumps
- CAT 230 Excavator or equivalent; 10 wheel dump truck

The fishway/outfall entrance construction will be completed during the instream construction window. Prior to initiation of construction activities, erosion and sediment control measures will be implemented. A silt fence will be placed along the top of the bank at the edges of the excavation area and will tie into the

cofferdam to limit sediment transport to the channel. A cofferdam will be constructed prior to any excavation below the top of bank. The anticipated cofferdam will be constructed of ecology blocks placed within the channel by an excavator. The cofferdam will be approximately 40 ft in length, 4 ft high, and semi-circular in shape encompassing the fishway discharge location. A thick plastic sheet will be placed over the ecology blocks to ensure a water tight seal. The plastic will be anchored with sand bags or native material (free of fine material) on both sides of the blocks. Two 36-inch standpipes will be placed within the cofferdam, one upstream and one downstream of the fishway structure site to form dewatering sumps. The dewatering pumps will drain the area within the cofferdam by drawing water from the sumps and delivering it to a construction sediment basin located on the hatchery construction site.

Once dewatering is accomplished, excavation of the site will proceed, with the material being placed in an approved area on-site. Anticipated excavation of 96 cy of bank materials (below the Ordinary High Water Mark) represents a decrease in the amount estimated for the previous outfall structure as presented in the BA (150 cy). The new fishway structure will be cast-in-place concrete. The fish ladder will be constructed from the river channel to the top of bank. The concrete walls will be backfilled to the final grade. Large natural stones will be placed on the upstream and downstream sides of the completed fishway to provide erosion protection.

The fishway will also be utilized to release juveniles from the facility. The entrance to the fishway will be grated (portable, removable) to prevent entry of river fish during periods of juvenile release.

During construction of the fishway a pool will be created at the base of the fishway entrance. This pool will maintain a minimum depth sufficient for adult holding prior to ladder ascension, and will also create a suitable plunge pool for juveniles during periods of release. The pool will be lined along the bottom and sides with river rock to prevent erosion.

Once the fishway outlet construction is completed from the river channel to the top of the existing bank, stoplogs will be installed at the entrance and the cofferdam removed. Final concrete finish work will be completed inside the dewatered channel, with no further potential impact to instream resources. Following construction, disturbed areas will be revegetated with native species, including herbaceous vegetation and shrubs.

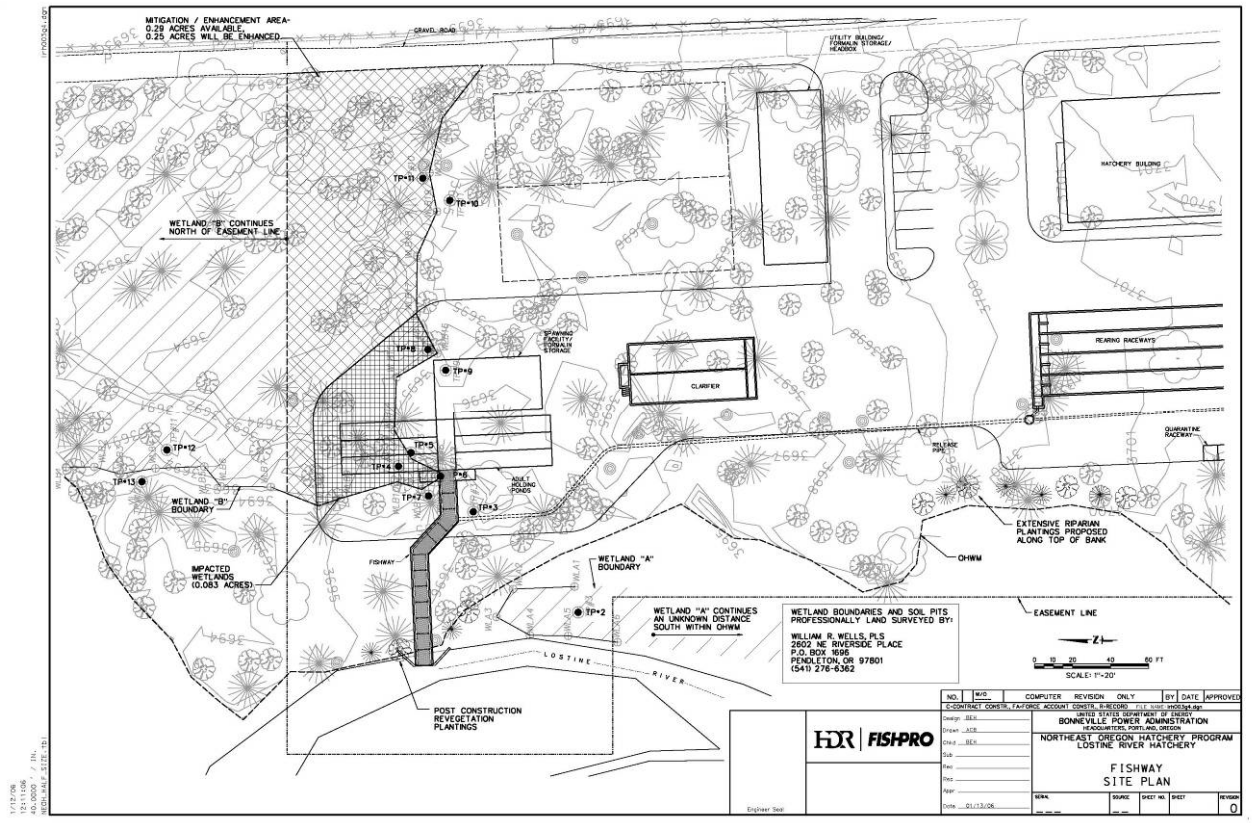

Figure 6. Proposed Lostine River Hatchery Fishway

Operational Changes

Hatchery Surface Water Withdrawal and Pumpback

As described in the BA, both Chinook and bull trout are known to spawn within the diversion reach (between the intake and outfall). Due to the presence of spawners in this reach, the NEOH team elected to impose restrictions on hatchery water withdrawals to ensure that a minimum instream flow equivalent to 50% of the total flow at the point of diversion, or 12 cfs, whichever is greater, is maintained within the diversion reach. To accomplish this, the team proposed a "pumpback" system to return hatchery effluent (up to 12 cfs) to the point of diversion. This pumpback system was to ensure that hatchery operations would have minimal impact on instream flow within the diversion reach.

As the design progressed into final planning, further analysis determined that pumpback would only be required for 13% of the water years on record assuming use of the "normal" hatchery flow strategy. In light of this information, the NEOH team questioned the need for such a large pumpback system and initiated discussions and analysis of other methods by which instream flow could be maintained at the levels discussed in the BA. To maintain flows equivalent to 50% of the total flow of the river, or 12 cfs, whichever is greater, the team now proposes the use of a modified low flow strategy (using Piper's Flow Index; Piper et al. 1982), in combination with an emergency pumpback system. It is likely that in the vast majority of water years, pumpback will not be required. However, as an added security measure to minimize impacts to instream flows, designers have maintained an emergency pumpback system capable of returning up to 4 cfs to the point of diversion. Based on average monthly flows, the need for pumpback under the Piper's Flow Index is relatively remote, effectively occurring only 3% of the water years on record. Table 3 presents the Piper's Flow Index proposed for use at the hatchery to maintain 50% of instream flows, or 12 cfs, whichever is greater. Combined with emergency pumpback, reduced flow rearing should minimize impacts to instream flow within the diversion reach.

The normal flow strategy, as described in the BA, provides an improved rearing and holding environment through higher turnover rates within the rearing units. This strategy is anticipated to be employed during normal instream flow years and conditions. Additional analysis has determined that because the rearing densities are so low at this facility, during periods of extreme low instream flow application of the Piper's Flow Index would adequately support the fish rearing on station while protecting the instream condition.

Table 3. Hatchery Water Requirements (cfs) Using Piper's Flow Index for Periods of Low Instream Flow.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Current normal flow strategy[1]	13.3	14.7	14.7	7.3	3.7	3.7	16.7	16.7	16.7	13.3	13.3	13.3
Piper's Flow[2]	3.7	4.0	4.1	2.5	3.7	3.7	6.3	8.4	9.1	4.7	3.8	3.7
Mean Monthly Streamflows[3]	49.4	47.5	55.6	162	512	789	381	85.9	50.6	55.6	63.3	57.9
Historic Low Flow (year)	15.0 ('37)	14.8 ('37)	16.3 ('55)	35.7 ('75)	203 ('77)	332 ('26)	59.7 ('77)	30.6 ('31)	23.0 ('31)	22.8 ('88)	14.7 ('36)	15.3 ('36)

[1] Includes an additional 10% of flow for operation of a sand separator during the months of February through June, if necessary.
[2] Piper et al. 1982. Fish Hatchery Management. USFWS. Washington D.C.
[3] Source: USGS Waterdata website (http://waterdata.usgs.gov/or/nwis). USGS Gage No. 13330000 on the Lostine River near Lostine, Oregon. Water years 1912- 2004.

To provide additional assurances for protection of redds constructed within the diversion reach, the Nez Perce Tribe (facility operator), in cooperation with ODFW, will monitor redds to determine if hatchery withdrawals are contributing to artificial dewatering, or if naturally occurring low flows lead to natural dewatering. As part of the monitoring effort, NPT biologists, as part of the project M&E, will develop an adaptive management strategy to monitor redds and river flow. This information will be used by hatchery operators to modify hatchery surface water withdrawals based on redd condition and instream flow.

Fishway Operations

During trapping periods, hatchery discharge water will be routed down the fishway for attraction flow. During non-trapping and non-release periods, water will bypass the ladder steps and be discharged at the base of the structure. Operation of the ladder for trapping will vary annually based on the river flows and the status of operations at the Wolfe Trap. If flows are low enough to operate the Wolfe Trap effectively during most of the run, use of the hatchery fishway will be minimal. However, if high flows during May through July preclude trapping at the Wolfe Trap site, the fishway will be used. To cover all potential trapping scenarios, the entire spring/summer Chinook run period is presented herein as the maximum operational period for the purposes of this consultation (May through September).

Adult Chinook that were reared at the Lostine River Hatchery and that are not trapped at the existing downstream low flow trap (Wolfe Trap) will likely cue to the proposed fishway to be located at the north end of the hatchery site. As described previously, this fishway will consist of a pool and step ladder that routes fish to a trapping/sorting structure. From this structure the adults will be sorted into adult holding ponds. Hatchery Chinook will be routed into one set of ponds, while non-target species will be released to the river. For the first few years of operation, particularly during the period of known bull trout migrations, the trapping structure will be visually checked daily and non-target fish will be returned to the river. Following the first few years of operation, trap operators should have sufficient baseline information to determine how often and how many non-target species, in particular bull trout, ascend the ladder. If the baseline information determines that checking traps every 24 hours is not necessary to prevent migrational delay because very few non-target species actually ascend the ladder, hatchery operators will initiate dialogue with the agencies to potentially develop an adaptive management approach to decide if it is appropriate to lengthen the time between visual inspections.

Trapped non-target fish will be returned to the Lostine River upstream of the fishway entrance via piped conveyance. Because the river stage varies annually, the return pipe will consist of flexible tubing that will be

attached to a fixed pipe on the top of the bank. The tubing can be positioned anywhere along the bank, allowing managers to assess instream flows and return fish to the river or side channel in locations most conducive to continuation of upstream migration and deterring their returning through the fishway. This will minimize handling of non-target species. The return tubing will be in place when the ladder is operational and removed once trapping is complete. The pipe and tubing will be sized to transport an adult salmonid, will have an appropriate slope, and will discharge into an area of the river that is the of adequate depth in relation to the drop out of the end of the pipe.

3.4 Acrow Panel Bridge site in the Lower Imnaha Subbasin

As described in the original BA, the existing bridge and associated abutments at this location will be removed via crane during ODFW's instream work window (July 15 through August 15). Following removal, the panel bridge was to be transported for use at the LACF. Because the LACF has been eliminated from the project, the bridge will no longer be used at the site. At this time it is unknown where the panel bridge will be relocated; however, no changes to the bridge removal techniques are proposed under the current project design. The bridge will likely be transported to a storage yard until a new use for the structure has been identified.

3.5 Imnaha Satellite Facility

3.5.1 Original Design

As presented in the original BA, the Imnaha Satellite Facility is an existing rearing facility completed in 1988. The facility is located on approximately four acres of USFS land in the upper Imnaha subbasin near RM 46 and is bounded by the Imnaha River and Forest Service road 3955. The USFWS owns the facility and holds a USFS special use permit for the facility. The facility is operated by ODFW for collection and holding of Imnaha spring/summer Chinook adults and acclimation of smolts prior to release. The original site plan included the addition of elements shown in Figure 7. All elements were proposed within the existing site boundaries. See photos A-3 to A-6 in Appendix A.

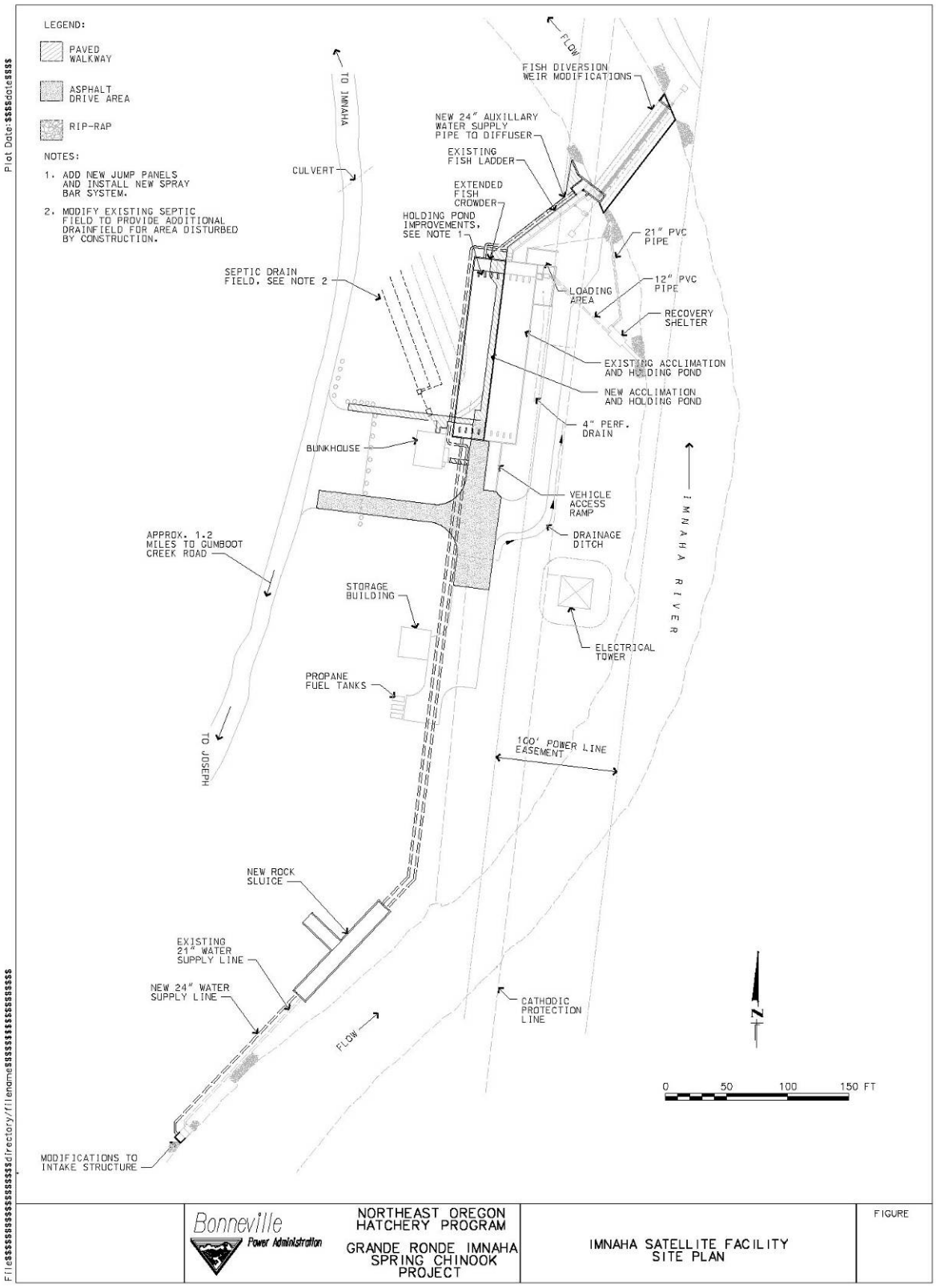

Figure 7. Imnaha Satellite Facility Existing and Proposed Site Plan as Presented in Original BA.

3.5.2 Proposed Changes to Design

Upland Site Component Changes

Minor modifications to the original site plan are proposed at the Imnaha Satellite Facility. The new site plan (see Figure 8) includes:

- Relocation of the intake rock sluiceway to a settling basin east of the existing storage building
- Redesign of the new acclimation and holding ponds to the east side of the existing holding ponds
- Extension of the existing storage building and addition of vehicle parking area
- Relocation of the vehicle access ramp
- Addition of adult holding area extension
- Additional portable generator and skid-mounted air compressor for pneumatically-controlled weir and intake screen cleaning
- Pre-manufactured equipment panel and building for pneumatically-controlled weir

The proposed redesign of facility components will result in a slight increase (less than 0.05 acres) of impervious surface area to the site compared to that presented in the original BA. All other proposed upgrades to this facility will occur as described in the BA. Appropriate erosion control measures (silt fencing) will be implemented during constructed to prevent sediment from entering the river associated with construction and staging areas.

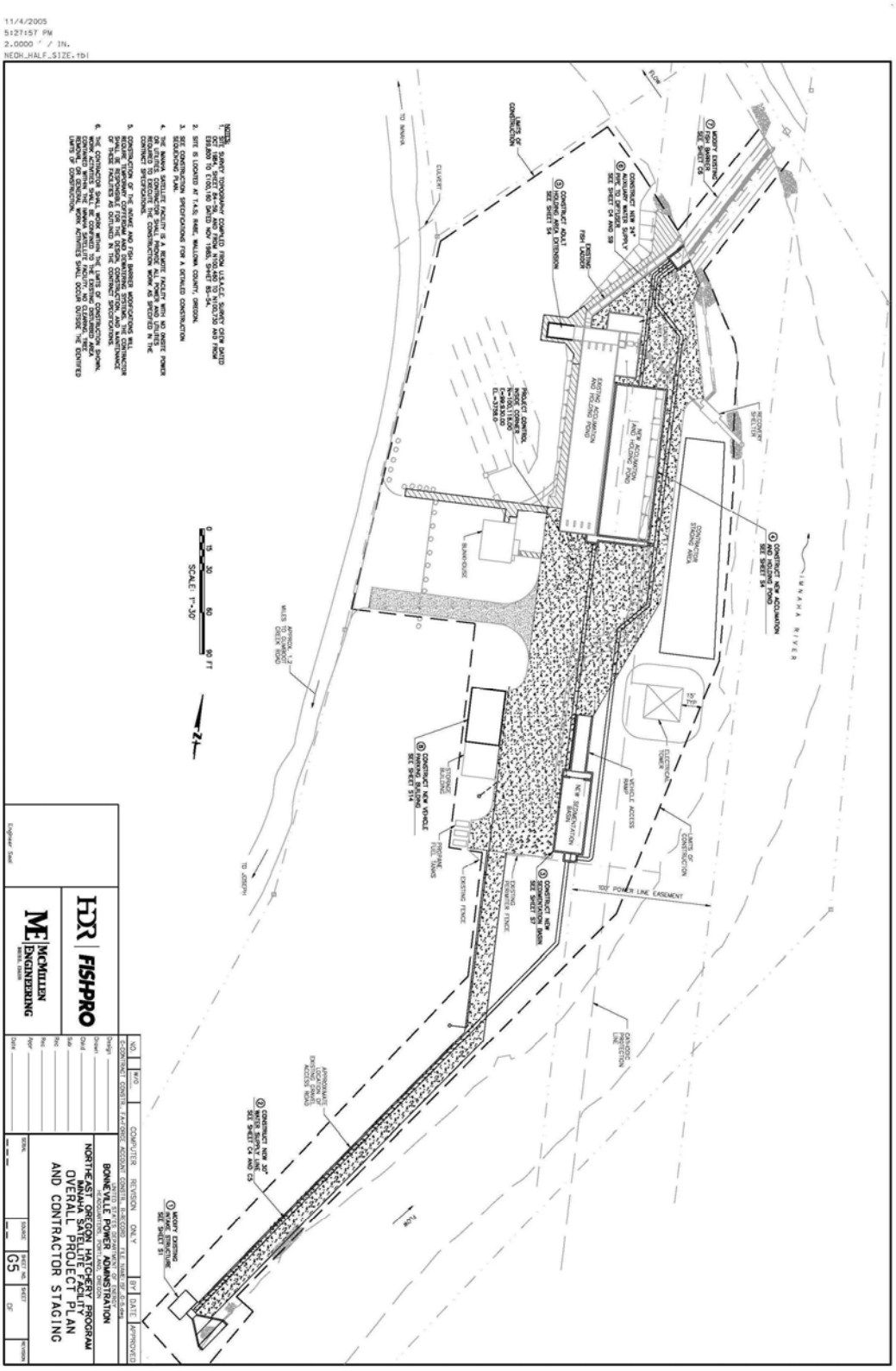

Figure 8. Current Imnaha Satellite Facility Site Plan.

Streambank and Instream Component Changes

Modifications to Replacement Weir Type

As described in the BA, a portable picket-style weir has been used to direct fish to the existing ladder. The picket weir does not direct fish effectively to the ladder because the ladder entrance is too far downstream for fish to locate it easily. Picket installation during high flows is difficult and hazardous and a portion of the run can be missed when the weir cannot be installed. This can result in a broodstock shortage and one that does not adequately represent the entire run with regards to genetic composition.

As presented in the BA, to alleviate some of the collection difficulties of the existing weir, a new hydraulically operated weir was proposed. The new weir was to require expanded concrete abutments on both sides of the river; construction impacts were to occur within the area of the existing weir and concrete sill. Upon further consideration and discussions with hatchery operators, it was determined that the weir type as proposed in the BA would still present some installation and operational difficulties to staff. To address this issue, a new weir type is now proposed.

The existing picket weir will be replaced with a pneumatically-controlled weir that will be inflated to create a vertical hydraulic drop which creates a barrier to upstream migrants. This new weir design has been approved by the U.S. Forest Service (Appendix B). Once reaching the weir, the migrants would be directed to the fish ladder entrance where they will ascend to the adult holding area for sorting and transport or return to the river. The weir will be operated during the adult trapping period (mid May through September).

The new pneumatically-controlled weir consists of a rubber bladder and hinged steel spillway gate to be mounted to the existing concrete apron. A skid-mounted portable air compressor and generator will be placed adjacent to the storage building. During operations, the spillway gate will be raised and lowered by inflating a rubber bladder located underneath the gate section. When not in use, the weir will lie flat on the concrete apron. At the highest weir position, the weir crest will be located approximately 3 ft above the existing concrete apron. The weir will be programmed to automatically maintain a set water surface on the upstream side of the weir. As the river flow increases, the weir crest will be lowered to maintain the preset water surface and pass the increasing flows. This will ensure that downstream flows are not impacted by the slight impoundment created behind the raised weir.

In order to install the pneumatically-controlled weir, a cofferdam will be installed on the upstream side of the existing concrete apron. It is anticipated that the work will be executed in sections to allow the Imnaha River flows to pass around the work area. The cofferdam will consist of ecology blocks covered with a plastic sheet (the BA described a much larger cofferdam, composed of driven sheet piling). The plastic will be used to seal the ecology blocks preventing water from seeping into the work area. Dewatering pumps will be installed to remove water from inside the work area. The dewatering system will discharge into the existing acclimation pond located on the left bank of the river. No excavation in the river channel is anticipated for the weir installation.

Once the work area is dewatered, the existing concrete slab, which slopes from the right bank to the left bank, will be modified to provide a level concrete apron. Anchor bolts will be drilled into the concrete slab to tie the new spillway weir and rubber bladders to the concrete apron. The steel gate sections will then be installed on the concrete apron. Air piping will also be installed within the concrete apron to provide air to the rubber bladders.

Although linear expansion of the abutments is no longer required (as presented for the original design in the BA), the existing concrete abutment walls will be raised approximately 2 ft to provide flood protection during the 100 year flood event (since weir will impound water upstream). This work will be accomplished by installing form boards on the existing walls, drilling and installing vertical steel dowels and horizontal reinforcement steel, then pouring the raised wall sections. Concrete is anticipated to be pumped to the right abutment walls. If this is not possible, equipment may need to be driven atop wooden cribbing on the concrete sill to access the right wall (to be determined by the contractor). The left abutment walls are accessible by the concrete trucks. A control panel and air system will be installed on the left abutment of the existing structure.

With the exception of the portable air compressor and generator needed to power the new weir, the basic construction techniques and disturbance footprint for installation of the weir are the same as proposed in the BA; however, operation of the weir will be different than the previously proposed hydraulically operated weir. Operational differences are described in the next section (*Operational Changes*).

Intake Design Changes

As described in the BA, modifications to the existing intake structure are necessary to allow for an additional 11.3 cfs of river water (for a total of 20.3 cfs) to be diverted from the Imnaha River for increased holding and rearing. Final designs require the complete replacement of the existing structure and replacement with a new structure. The removal of the existing intake and installation of the new intake will occur within the same area of proposed streambank disturbance as described in the BA. However, a new 4 ft by 4 ft structure will be placed on the top of bank adjacent to the intake to house valves associated with an air receiver for intermittent air burst cleaning. The structure will consist of an imitation fiberglass rock enclosure, which will house equipment with limited visual intrusion. Additionally, the 100 cubic yards of river rock originally proposed to be placed upstream and downstream of the structure for stabilization has been reduced to 12 cubic yards with the new intake design. Another minor difference in the construction methodology is that the intake will now be constructed within an ecology block and plastic cofferdam approximately 45 ft long and 10 ft wide (BA proposed a cellular cofferdam up to 45 ft long and 10 ft wide).

The new intake design was preliminarily reviewed and verbally approved by NOAA Fisheries Engineering (J. Johnson, NOAA Fisheries Engineering pers comm.). It should be noted that the verbal approval is conditioned upon review of final engineering plans.

Operational Changes

New Replacement Weir Operation

During periods of adult collection (potentially beginning as early as mid May through September), the weir will be inflated and essentially block fish passage. During all other times of the year (October through mid May), the pneumatically-controlled weir will lie flat, allowing fish to pass directly upstream or downstream over the weir.

During adult collection, downstream migrants will pass over the weir and upstream passage will be provided through the existing ladder. This is essentially an existing condition as the existing weir currently blocks upstream passage during adult collection periods. However, operation of the existing weir during the latter half of May has only been possible, on average, 10% of the years of facility operation. The new weir has been designed to allow collection during higher flows, therefore additional upstream migratory delay to non-target fish may occur during the latter half of May.

Surface Water Budget

The original surface water budget as presented in the BA did not require surface flow during the month of May. This was primarily due to the fact that installation of the existing weir during May has only been possible during about 10% of the years of operation due to extreme high flows and subsequent operational limitations (i.e. danger to staff). However, the new weir design is intended to provide safe and effective trapping capabilities throughout a longer duration of the run, including the second half of May. Therefore, although flows may still be too high to operate the new weir consistently during the month of May, water rights have been requested for the month to cover that time period should collection be possible. The new surface water budget, shown in Table 4, highlights the change for the month of May (bolded) from that presented in the original BA. The current water budget now includes the maximum surface water diversion during that month to operate the adult holding ponds and ladder should collection be possible. The impact of this diversion on instream flows should be negligible considering average flows during May exceed 800 cfs.

Table 4. Surface water requirements per usage, mean monthly stream gage flow, and historic low flows for the Imnaha Satellite Facility (cfs)[1].

	Mar	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sept**
Acclimation needs Attraction flow and adult holding pond	9.6	9.6	**20.3**	20.3	20.3	20.3	20.3
Mean monthly streamflows	92.0	341	804	859	453	150	87.1
Historic Low Flows (year)[2]	65.1 (1952)	201 (1950)	513 (1950)	636 (1947)	236 (1949)	99.6 (1949)	64.4 (1949)

[1]Source: USGS Waterdata web site (http://waterdata.usgs.gov/or/nwis); gage located above Gumboot Creek, upstream of facility. Water Years 1944 – 1953.
[2]Year of occurrence

4.0 Impacts

4.1 Terrestrial Species

4.1.1 Canada Lynx

Since the BA was issued, no changes to the listing status of Canada lynx have occurred; however, critical habitat has been proposed over some of the species' range. On November 9, 2005, the USFWS published a proposed rule to designate critical habitat for the federally threatened Canada lynx, in compliance with a court order. In total, approximately 26,935 square miles of land fall within the boundaries of the proposed critical habitat designation in portions of northern Maine, northeastern Minnesota, the northern Rocky Mountains (northwestern Montana and a small portion of northern Idaho), and the Okanogan area of the northern Cascades in north-central Washington. No critical habitat has been proposed for the state of Oregon; therefore this proposal does not necessitate amendments to the critical habitat discussion presented in the BA.

Occurrence and Impacts Due to Proposed Project Changes

The Lostine River Hatchery site is located within a developed residential area, is well below the species' preferred minimum elevation of 4,500 ft, and is not likely to provide primary lynx habitat. Denning is not likely to occur in the immediate vicinity based on the existing level of human presence and use resulting from roads, surrounding residential development, and agriculture in the vicinity. The Imnaha Satellite Facility is currently developed as a hatchery and proposed improvements will not expand the existing developed area or substantially increase the level of human disturbance activities over existing conditions. Denning is not likely to occur in the immediate vicinity based on the existing level of disturbance at the Satellite Facility, the existing roadway corridor, and the lack of suitable primary habitat at this location. The Satellite Facility is closed for operation from October to end of February. The area will be available for potential lynx use during these winter months, but since the facility will not operate in winter months, operations will not affect lynx.

Changes to the Lostine River Hatchery design will not affect denning habitat for lynx. Lynx are not known to utilize the northern portion of the hatchery parcel where new facilities are now sited, and lynx are not known to utilize the new intake access road location. Proposed changes will not result in encroachment into the nearby Eagle Cap Wilderness area boundary (about ½ mile from the hatchery site), an area believed to provide suitable lynx habitat. With regard to the existing Imnaha Satellite Facility, no significant changes to upland modification will occur. Because this site is an existing low-use area in the spring and summer months, no impact to lynx due to project changes is anticipated. In general, construction methods and timing, along with operational timing at each facility, will remain identical to that described in the original BA.

Effect Determination

Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will not alter the effect determination presented in the original BA. The project will have *no effect* on Canada lynx.

4.1.2 Bald Eagle

Since the BA was issued, no changes to the listing status of bald eagle have occurred.

Occurrence and Impacts Due to Proposed Project Changes

As discussed in the BA, there are documented bald eagle winter roosts or nest sites along the Wallowa River, more than five miles from the proposed Lostine River facilities. In addition, the ONHP notes the presence of a winter roost site on the Lostine River, within one mile of the proposed Lostine Hatchery site, where up to nine eagles were observed in 1990. Bald eagles are likely to forage or roost along the entire Lostine River corridor; however, no bald eagle nest sites are known to occur in the vicinity of the proposed Lostine River Hatchery parcel or the associated intake location.

There are no known bald eagle nest sites or communal winter roost sites within the Imnaha subbasin.

Removal of additional trees at the Lostine River Hatchery site resulting from shifting of infrastructure to the northern end of the parcel (which is extensively vegetated) may result in the additional removal of potential roosting trees. However, this impact is offset on a watershed scale by the fact that the trees will no longer be removed for construction of the LACF. Additionally, because the Lostine Hatchery site is a relatively undeveloped area, additional tree removal is mitigated by the presence of trees of similar size immediately adjacent to areas where trees will be removed. Mature trees will be avoided, where possible, on the northern portion of the hatchery site; however some tree removal in this area is unavoidable.

No winter roosting or nesting territories have been documented in the vicinity of the Imnaha Satellite Facility. Any use of the area by bald eagles most likely consists of transient foraging individuals during the wintering period. Changes to the project will not result in the additional removal of mature trees that may be utilized by transients for foraging perches.

Effect Determination
The additional removal of trees from the northern portion of the Lostine River Hatchery site may result in the removal of potential perch trees; however this is offset on a watershed scale by avoidance of tree removal by eliminating the LACF site from the project. Proposed changes to the site plans at the Lostine River Hatchery and the Imnaha Satellite Facility will not change the effect determination previously recommended for bald eagles. The proposed project *may affect, but is not likely to adversely affect*, bald eagles.

4.1.3 Yellow-billed Cuckoo

Since the BA was issued, no changes to the listing status of yellow-billed cuckoo have occurred.

Occurrence and Impacts Due to Proposed Project Changes
As described in the BA, the forested riparian communities at the Lostine River Hatchery site provide potentially suitable breeding and feeding habitat for the yellow-billed cuckoo. Additional proposed construction on the northern portion of the hatchery parcel may result in the removal of more trees than predicted in the original BA. However, because the LACF will no longer be constructed, additional tree removal at the Lostine River Hatchery site will not likely increase impacts to the species on a watershed scale.

Effect Determination
Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will not alter the effect determination presented in the original BA. The project will not pose significant threats to the species. Impacts to yellow-billed cuckoo individuals may occur as a result of disturbance to potentially suitable habitat; however, no change in impacts compared to those described in the BA is anticipated.

4.1.4 Columbia Spotted Frog Occurrence

Since the BA was issued, no changes to the listing status of Columbia spotted frog have occurred.

Occurrence and Impacts Due to Proposed Project Changes
As described in the BA, suitable habitat for Columbia spotted frog may be present in portions of the meander side channel located adjacent to the proposed Lostine River Hatchery site. Localized impacts may result from construction of the fishway/outfall structure; however, disturbances to potential habitat are not likely to exceed the level previously described in the BA.

Additional potentially suitable habitat for the species is present on neighboring properties, specifically a small ponded wetland approximately 50 feet east of the south production well. This pond could potentially serve as breeding habitat for the spotted frog, although no surveys have been completed to confirm the presence of the species. This wetted pond may be subject to water level fluctuations during maximum facility groundwater usage (1,450 gpm), which will occur during the month of February. Based on new information provided by an October 2005 well pump test, maximum sustained groundwater pumping has caused temporary

groundwater drawdown within 150 ft of the existing hatchery wells. Breeding likely occurs from May to June in the vicinity of the site, during which approximately 900 gpm of groundwater will be utilized. Drawdown levels cannot be predicted at this time; however, if significant drawdown does occur during these moderate groundwater usage periods, potential breeding habitat could be impacted. However, this pond is relatively small and ample suitable breeding habitat is available in the immediate vicinity to which individuals could migrate. It should be noted that this pond has been dewatered on other occasions when no pumping has occurred in the test wells, suggesting drawdown may be related to other local activities and groundwater uses (i.e. local irrigation, drought, recently installed drainage structures on adjacent property).

Effect Determination
Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will not alter the effect determination presented in the original BA. Results of pump tests indicate that maximum sustained groundwater pumping may impact individuals or small areas of suitable habitat, but will not likely pose significant threats to populations of the Columbia spotted frog.

4.1.5 Slender Moonwort

Since the BA was issued, no changes to the listing status of slender moonwort have occurred.

Occurrence and Impacts Due to Proposed Project Changes
Elevation aside, potential habitat characteristics suitable to the species are present at both the Lostine River Hatchery and the Imnaha Satellite Facility sites. However, no *Botrychium* species were observed during the initial field survey. Based on the lack of field sightings and the location of the sites well below the known elevation band in Oregon, the proposed project will not likely contribute to a trend towards federal listing or cause a loss of viability of populations or the species.

Effect Determination
Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will not alter the effect determination presented in the original BA. The project, although highly unlikely, may impact individuals or small areas of suitable habitat, but will not likely pose significant threats to populations of slender moonwort.

4.1.6 Macfarlane's Four O'Clock

Since the BA was issued, no changes to the listing status of Macfarlane's four o'clock have occurred.

Occurrence and Impacts Due to Proposed Project Changes
As indicated in the BA, the Acrow Panel bridge site is the only site that is located within habitat that is potentially suitable for Macfarlane's four o'clock. No habitat occurs for the species occurs at either the Lostine River Hatchery site or the Imnaha Satellite Facility.

Effect Determination
Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will not alter the effect determination presented in the original BA. The project will have *no effect* on Macfarlane's four o'clock.

4.1.7 Spalding's Catchfly (aka Spalding's campion)

Since the BA was issued, no changes to the listing status of Spalding's catchfly have occurred.

Occurrence and Impacts Due to Proposed Project Changes
As indicated in the BA, the Lookingglass Hatchery and the Acrow Panel bridge sites are located within areas of potentially suitable habitat and elevational range for Spalding's catchfly. No actions will occur at the Lookingglass Hatchery under this project. No changes to construction activities as discussed in the BA are

proposed at the Acrow Panel bridge site. Although Spalding's campion is currently known from a total of 52 populations (USFWS 2001a) including seven in Wallowa County, no habitat for the species occurs at either the Lostine River Hatchery site or the Imnaha Satellite Facility.

Effect Determination
Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will not alter the effect determination presented in the original BA. The project will have *no effect* on Spalding's Catchfly.

4.1.8 Howell's Spectacular Thelypody

Since the BA was issued, no changes to the listing status of Howell's thelypody have occurred.

Occurrence and Impacts Due to Proposed Project Changes
As indicated in the BA, all of the proposed project locations are well outside of the extant range of Howell's spectacular thelypody. Additionally, no suitable alkaline meadow habitat occurs within the immediate vicinity of any of the sites. The proposed project will not affect this species based on a lack of suitable habitat within the project action area.

Effect Determination
Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will not alter the effect determination presented in the original BA. The project will have *no effect* on Howell's spectacular thelypody.

4.2 Aquatic Species

The following section presents information relative to project changes and their impact on aquatic species as compared to those impacts previously described in the BA. ESA listing updates relative to each species will be presented first, along with a characterization of species use at the only new location proposed for in-water construction – the Lostine hatchery intake site. Species utilization for all other habitats proposed for in-water work was thoroughly discussed in the original BA. Listing updates and species use will be followed by a cumulative presentation regarding the effect of project changes relative to listed fish species. Effect determinations for individual species and their critical habitat will complete the section.

4.2.1 Listing Updates and Habitat Utilization at New Lostine River Intake

Bull Trout

Since the BA was issued, no changes to the listing status of bull trout have occurred; however proposed critical habitat has now been designated for the Columbia Basin Distinct Population Segment (DPS). On September 26, 2005 the USFWS published its final rule on designation of bull trout critical habitat. Both the Imnaha and Lostine rivers in the vicinity of the proposed actions have been designated as critical habitat (70 FR 56212; USFWS 2005a). Specifically, the Lostine River at the hatchery site and intake location (upstream to the USFS boundary) is within bull trout designated spawning and rearing critical habitat. Areas containing critical habitat for bull trout are within the historic geographic range of the species and contain one or more physical or biological features (also known as primary constituent elements [PCEs]) necessary for the conservation of the species. These PCEs are: permanent water having lower levels of contaminants such that normal reproduction, growth and survival are not inhibited; water temperatures ranging from 2 to 15^{o} C, with adequate thermal refugia available for temperatures at the upper end of this range; complex stream channels with features to provide a variety of depths, velocities and instream structures; substrates of sufficient amount size, and composition to ensure success of all egg through juvenile life stages; a natural hydrograph; springs, seeps and groundwater sources to contribute to water quality and quantity; migratory corridors with minimal barriers between habitat types; abundant food base; and few or no predatory, interbreeding or competitive nonnative species.

Stream surveys conducted in the early 1990s indicated a low abundance of adult bull trout in the Lostine River (ODFW 1995; Bellerud et al. 1997). More recent spawning surveys have been conducted by the USFS, in cooperation with the NPT, ODFW, and the USFWS, on index areas for selected Grande Ronde streams from 1999 to 2005, including the Lostine River (G. Sausen, USFWS, personal comm., 3/23/04; 11/21/05). It should be cautioned that these spawning surveys are not an estimate of escapement, and that redds were believed by experienced surveyors to be those of bull trout based on timing, size of gravels/cobbles, and size of redds compared to Chinook (G. Sausen, USFWS, pers comm., 4/13/04). As a result of these surveys, bull trout spawning survey areas on the Lostine River have been established and include Shady Falls to French Camp, French Camp to Bowman, Walla Walla to Williamson, Pole Bridge to 6 Mile Bridge, Lundquist Bridge to OC Ranch, and OC Ranch to Westside Ditch. While the hatchery site is located within the Lundquist Bridge to OC Ranch spawning area, the intake location is upstream of this reach, within an area that has not been surveyed for many years. There have been 0 to 5 bull trout redds observed in the Lundquist Bridge to OC Ranch bull trout spawning index area from 1999 to 2005: 1 in 99, 0 in 2000, 2 in 2001, 3 in 2002, 3 in 2003, 5 in 2004, and 0 in 2005 (G. Sausen, USFWS, pers comm., 11/21/05). Spawning surveys conducted by the USFWS indicate that spawning occurs directly upstream and downstream of the intake location (upstream is the Pole Bridge to 6 mile bridge section, and downstream is the Lundquist bridge to OC Ranch section).

In the vicinity of the proposed intake structure instream substrate consists of large 6-12 inch cobbles and small one to two foot boulders. While adult bull trout may hold in this area during their migrations to (June – August) and from (September – October) spawning grounds, spawning habitat is limited (G. Sausen, USFWS, pers comm., 11/21/05) due to a lack of suitable substrate and heavily armored banks precluding establishment of gravels. Bull trout do use this area for rearing, feeding, and migrating to and from spawning habitat upstream and downstream. Juvenile bull trout may utilize the area for rearing, making use of the space between riprap; however, the east bank of this location is devoid of overhanging vegetation which may preclude high utilization. The west bank contains more potential for rearing habitat as overhanging vegetation is present to provide cover.

As noted in the USFWS BO (2004) prepared for a bank stabilization project at the Nez Perce Tribe acclimation raceways, located just downstream of the proposed hatchery, most summer rearing areas in the Lostine River are on National Forest lands above RM 12.4. Spawning presumably occurs in these headwaters areas and in some headwater tributaries. The proposed intake location is located approximately 500 ft downstream of the USFS boundary. The Lostine River below RM 12.4 is characterized as summer holding/foraging habitat and migratory habitat.

Snake River Spring/Summer Chinook

Since the BA was issued, no changes to the listing status of Snake River spring/summer Chinook or critical habitat have occurred.

In the vicinity of the proposed intake structure the substrate consists of large 6-12 inch cobbles and small one to two foot boulders. Gravels potentially suitable for Chinook spawning do occur in pockets among the boulder-type substrate, but, as with bull trout, Chinook spawning is unlikely in this area (R. Zollman, NPT, pers comm., 11/8/05). Additionally, this area of the Lostine is subject to heavy icing during the winter months. Preferred spawning areas are located downstream where groundwater upwelling maintains river flow. Juvenile rearing in this location is likely; however, food sources may be lacking due to a general lack in overhanging vegetation due to the heavily riprapped east bank.

Snake River Steelhead

Since the BA was issued, the listing status of Snake River steelhead (threatened) has been confirmed (71 FR: January 5, 2006, Number 3). As part of this final designation, NOAA Fisheries changed the reference term for specific steelhead populations from ESU to DPS. This reflects the shared jurisdiction over *O. mykiss* (which includes both anadromous steelhead and resident rainbow trout), and is consistent with the Services'

approach for Atlantic salmon. The Services believe application of the joint DPS policy is logical, reasonable, and appropriate for identifying DPSs of *O. mykiss* (71 FR 833). In addition to the final species designation and change to DPS, the critical habitat designation has been updated. A summary of listing actions related to critical habitat is presented in the following paragraph. Any reference to steelhead ESUs is from here forward modified to reflect the change to DPS.

On April 30, 2002 the U.S. District Court for the District of Columbia approved a NOAA Fisheries consent decree withdrawing critical habitat designations for 19 salmon and steelhead populations on the West Coast, including the Snake River steelhead DPS. However, on November 30, 2004 NOAA Fisheries requested public comment on its proposal to re-designate critical habitat for 20 DPS of salmon and steelhead, including the Snake River steelhead DPS. Proposed Snake River steelhead critical habitat included 26 units within the DPS. The Imnaha River Subbasin (Hydrologic Unit Code # 17060102) and Wallowa River (Hydrologic Unit Code # 17060105) subbasins were designated as Units 2 and 5 respectively. On August 12, 2005, NOAA Fisheries announced the final designation of critical habitat for the Snake River steelhead DPS (NOAA 2005a); this designation was formally published in the Federal Register on September 2, 2005 (70 FR 52629; NOAA 2005b). Both the Imnaha and Lostine rivers are included in the final designated critical habitat for the Snake River steelhead DPS (NOAA 2005a, b); therefore, critical habitat is designated in the project area. The final rule became effective January 2, 2006.

In the vicinity of the proposed intake structure the substrate consists of large 6-12 inch cobbles and small one to two foot boulders. Gravels potentially suitable for spawning do occur in pockets among the boulder-type substrate, but spawning is unlikely in this area due to the overwhelming presence of larger substrate that may prohibit the establishment of redds. Of all the salmonid species present in the Lostine, juvenile steelhead may utilize this location more than any others due to the slightly constricted nature of the site and the potential for faster flows that steelhead prefer. As with Chinook and bull trout, although juvenile rearing is likely in this location, the presence of extensive amounts of riprap along the banks limits the establishment of overhanging vegetation in this location.

4.2.2 Impacts during construction

Direct effects to migrating or rearing bull trout, Chinook and steelhead that may be present in the project area during the ODFW-designated instream work window (July 15 – August 15) may include harassment due to potential sedimentation, fuel spills, and noise and vibrations caused by instream activities. However, proposed project redesigns are not anticipated to result in levels of take exceeding those previously authorized under NOAA Fisheries and USFWS BOs specific to this project. Several categories of activities may result in direct or indirect impacts to listed species. These activities and their associated impacts to listed fish species are described in the following sections in relation to each of the sites at which project changes are proposed, the Lostine River Hatchery and the Imnaha Satellite Facility.

Lostine River Hatchery

Channel Alterations

Design changes to the proposed in-water components at the Lostine River Hatchery include:

- Relocation and redesign of the intake structure, including installation of associated buried concrete sill and rock weir
- Addition of a fishway outlet along the banks of the Lostine River in the area previously proposed for outfall installation
- Redesign of slope protection methods (bioengineering in lieu of riprap)

Specific construction methods relative to each of the bulleted items above were described previously.

The use of bioengineering techniques in lieu of riprap to protect the proposed Lostine River Hatchery from flooding events that may cause bank erosion eliminates the potential impact of riprap placement on seasonal overflow channel habitat, habitat which may eventually comprise the east bank of the Lostine River due to the dynamic nature of the system in this reach.

During in-water construction, fish that inhabit the immediate area, including juvenile salmonids, may be temporarily displaced; however, this is a short term condition and fish are anticipated to recolonize the area following cessation of activities. Some mortality may occur, but is not anticipated, during dewatering activities. Juvenile bull trout will likely be farther upstream in July to avoid warm river temperatures, although both adult and juvenile bull trout are known to use this stretch of the Lostine in the summer. Passage of migrating bull trout and Chinook may be temporarily delayed during the July instream work window. Locally spawning Chinook generally do not enter the area until later in the summer, but juvenile Chinook are known to use this stretch of the Lostine in the summer. Summer steelhead complete spawning by July, and kelts may be impacted.

Alterations of river hydrology due to placement of instream structures may occur, but will affect minimal amounts of habitat and are not anticipated to affect flow or river geomorphology. Rerouted water flow during construction is not anticipated to affect ambient water temperatures. Long-term impacts are unlikely, but may include behavioral modifications and changes in the distribution of individual fish due to changes in upstream and downstream hydrology.

The amount of riparian vegetation to be removed at the fishway outlet and side-channel floodproofing sites will be limited to the least extent possible. Riparian vegetation at the side channel floodproofing location is limited to low-growing shrubs and herbaceous vegetation, which do not provide significant shading benefits. A limited number of trees may be removed from the fishway outlet location. Reduction in shading or overhanging vegetation is anticipated to be minimal. Fish will likely relocate to areas adjacent to the project site that have suitable riparian vegetation cover.

According to NOAA Fisheries (NOAA 2003), "salmon and steelhead are generally able to avoid the adverse conditions created by (in-water) construction if those conditions are limited to areas that are small or local compared to the total habitat area, and if the system can recover before the next disturbance. This means juvenile and adult salmon and steelhead will, to the maximum extent possible, readily move out of a construction area to obtain a more favorable position within their range of tolerance along a complex gradient of temperature, turbidity, flow, noise, contaminants, and other environmental features. The degree and effectiveness of the avoidance response varies with life stage, season and the frequency and duration of exposure to the unfavorable condition, and the ability of the individual to balance other behavioral needs for feeding, growth, migration, and territory. Chronic or unavoidable exposure heightens physiological stress thus increasing maintenance energy demands. This reduces the feeding and growth rates of juveniles and can interfere with juvenile migration, growth to maturity in estuaries, and adult migration." NOAA goes on to state that, with due diligence and implementation of a full range of mitigation measures, "the threat is negligible that the environmental changes caused by events at any single construction site associated with a proposed activity, or even any likely combination of such construction sites in proximity, could cause chronic or unavoidable exposure over a large habitat area sufficient to cause more than transitory direct affects to individual salmon or steelhead."

Additionally, NOAA Fisheries (2003) states that "small to intermediate reductions in juvenile population density in action areas caused by individuals moving out of the construction area to avoid short-term physical and chemical effects of the proposed construction are expected to be transitory and are not expected alter juvenile survival rates. Because adult salmon and steelhead are larger and more mobile than juveniles, it is unlikely that any will be killed during work area isolation, although adults may move laterally or stop briefly during migration to avoid noise or other construction disturbances." NOAA Fisheries goes on to state that with due diligence and implementation of mitigation measures as proposed "it is unlikely that physical and

chemical changes caused by construction events at any single construction site associated with a proposed activity, or even any likely combination of such construction sites in proximity, will cause delays severe enough to reduce spawning success and alter population growth rate, or cause straying that might alter the spatial structure or genetic diversity of populations. Thus, it is unlikely that the direct biological effects of construction associated with the proposed action (instream work) will affect the characteristics of salmon or steelhead populations."

Water Gains and Losses

Maximum surface water diversions will not exceed those levels presented in the original BA. In fact, on average, during "normal" operations (i.e. when instream flow is sufficient to allow maximum withdrawal for hatchery usage), the revised water budget requires slightly less surface water than the original budget. Table 5 presents the "normal" flow strategies of the current water budget compared to that presented in the BA. Minor changes to the normal flow amounts have resulted from "fine tuning" of various elements of the facility since the BA was written, including the fact that final estimated fish sizes have changed as a result of updated water temperatures. Adult holding water requirements increased as a result of providing more space for segregation of adults by sex and increasing temporary holding space.

Table 5. Surface water normal flow strategies for current water budget and that proposed in original BA (Mean monthly streamflow, and historic low flows (cfs) for the Lostine River are also presented).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Previous normal flow strategy	15.0	15.0	15.0	7.5	2.8	2.8	17.8	17.8	17.8	15.0	15.0	15.0
Current normal flow strategy[1]	13.3	14.7	14.7	7.3	3.7	3.7	16.7	16.7	16.7	13.3	13.3	13.3
Mean Monthly Streamflows [2]	49.4	47.5	55.6	162	512	789	381	85.9	50.6	55.6	63.3	57.9
Historic Low Flow (year)[3]	15.0 ('37)	14.8 ('37)	16.3 ('55)	35.7 ('75)	203 ('77)	332 ('26)	59.7 ('77)	30.6 ('31)	23.0 ('31)	22.8 ('88)	14.7 ('36)	15.3 ('36)

[1] Includes an additional 10% of flow for operation of a sand separator during the months of February through June, if necessary.
[2] Source: USGS Waterdata website (http://waterdata.usgs.gov/or/nwis). USGS Gage No. 13330000 on the Lostine River near Lostine, Oregon. Water years 1912- 2004.
[3] Year of occurrence

Habitat utilization for all aquatic species in relation to spawning and incubation within the diversion reach is thoroughly described in the BA. As presented in the BA the normal flow strategy will be used when less than 50 percent of instream flow is utilized by the hatchery and when the 12 cfs minimum flow is achieved. Flows will be measured at the hatchery headbox and compared to real-time surface water data from the USGS gage (#13330000) near Lostine, Oregon. As an additional protective measure for redds in the diversion reach, surveys will be conducted by NPT biologist to determine if they are in danger of becoming dewatered as a result of naturally-occurring low flows in combination with hatchery operations. Hatchery water requirements may be lowered utilizing reduced flow (Piper's flow index), pumpback, reuse strategies, or a combination of these actions, to reduce surface water requirements and allow more water through the diversion reach to protect redds to the extent practicable. Winter low flows are an existing condition in this system, and with implementation of the proposed water conservation measures, the hatchery is not anticipated to exacerbate the existing low flow condition.

In summary, hatchery surface water usage is anticipated to have less impact to the diversion reach than described in the original BA. This conclusion is based on the following rationale:

1. As presented in Table 5, the "normal" flow requirement for hatchery operations is slightly less than what was described in the BA.

2. The diversion reach is now approximately 2,800 feet of channel. The diversion reach as described in the original BA was 3,200 feet; therefore relocation of the intake results in a reduced diversion reach thereby reducing potential impacts to instream flow due to hatchery withdrawals.
3. The elimination of a fish ladder at the intake location eliminates the need for an additional 5 cfs to flow through the ladder for a linear distance of 60 feet.
4. During periods of low instream flow, the Piper's flow index, combined with utilization of a pumpback system will result in negligible impact to instream flows.

Water Quality

Impacts to water quality in relation to hatchery operations were thoroughly discussed in the original BA. Although the low flow regime has been modified to Piper's flow index, by law, the level of discharged pollutants will be within the limitations of the general NPDES permit for aquaculture facilities that produce less than 300,000 pounds, administered by the ODEQ. By complying with acceptable values, the impact of effluent on receiving waters and the aquatic environment is expected to be minimal.

Operation of Fish Traps, Ladders and Weirs

Rock Weir at Intake

Impacts due to relocation of the intake structure are anticipated to be reduced compared to those anticipated due to the previous structure. The previous structure was sited approximately 400 ft upstream of the current location, resulting in a longer diversion reach where habitat could potentially be impacted by hatchery withdrawals. Additionally, the previous intake facility was to contain a pneumatically-controlled weir that was to essentially block all passage during periods of low flow. During these periods, the only way to move past the weir was going to be through the fish ladder. Attempts to locate the ladder and ascend could have caused migratory delay. The newly designed intake structure will contain a rock weir instead of a pneumatically-controlled weir. During normal flows, upstream and downstream passage will be available over the weir. During low flows passage will be accommodated through a three-foot opening in the weir along the east bank. The opening will be maintained and debris removed if necessary to ensure passage is available at all times. The concrete sill required to support the rock weir will be sloped to concentrate low-flow stream conditions to east side of the channel, assuring adequate water depth for fish passage.

Monitoring for passage efficiency at the rock weir will occur in the first season of operation, and during any unusual flow scenarios (either extreme high or low flows). Monitoring of this structure is essential to assure impacts to fish species are not occurring as a result of this action. Visual observation of upstream and downstream migrants will be performed. Surveys will be performed daily in the vicinity of the intake and also in portions of the diversion reach. Corrective measures that ensure the survival of naturally reproducing adults must be immediately applied should passage problems occur with the weir. Consultation with the USFWS and NOAA Fisheries will be immediately initiated should it be determined that the structure is preventing migration.

Fishway and Trap

During trapping operations (maximum trapping period is May through September) hatchery discharge water will be routed down the fishway. During non-trapping periods and when juveniles are not being released, water will bypass the ladder steps and be discharged at the base of the structure.

It is anticipated that hatchery fish (reared on the combination of ground and surface water that will comprise the ladder flow) will cue into the ladder and be trapped. To limit take of non-target fish, the trap will be visually inspected daily and non-target species will be returned to the river with hold times not exceeding 24 hours. Trapped non-target species will be returned to the Lostine River upstream of the trapping site via piped conveyance. Because yearly river flows are extremely variable, operation of the return pipe will be conducted using an adaptive management approach. A permanent return pipe will route non-target species from the trapping/sorting area to the top of bank near the fishway. From the top of bank, a portable flexible

pipe (tubing) will be attached to the permanent pipe outlet. The flexible piping can be positioned anywhere along the bank, allowing managers to gage instream flows and return fish to the river or side channel in locations most conducive to continuation of upstream migration. This water to water transfer will minimize handling of non-target species. The return pipe will be seasonally placed during trapping, and removed following trapping periods. The return pipe will be large enough to transport an adult salmonid, have an appropriate slope, and discharge into an area of the river that is the correct depth in relation to the drop out of the end of the pipe. The return pipe will only contain flow during periods when non-target species are returned to the river.

During trapping operations, monitoring will be critical to avoid double handling of non–target fish, first at the Wolfe Trap, then at the upstream Lostine Hatchery fishway. However, the potential for double handling is reduced under the new trapping scenario. This is because the proposed Lostine Hatchery fishway will be located on the east bank of the river, in a section of river that is extensively braided and approximately 120 feet wide. Although the potential for non-target fish to be attracted to the ladder and ascend does exist, because they aren't imprinted to hatchery discharge water and because the river is relatively wide in the vicinity of the fishway, non-target species will, in general, likely pass the ladder entrance and avoid being trapped. The velocity barrier at the formerly proposed LACF ensured all upstream migrating fish would ascend the ladder, meaning all bull trout were to be subject to trapping, handling, and migrational delay. Therefore, with implementation of the new ladder scenario, take relative to trapping of non-target species is likely reduced under the proposed project change. Additionally, because the LACF fish trap is no longer part of the proposed action, trucking of broodstock to the Lostine hatchery is no longer necessary, thereby reducing stress to broodstock. However, trucking from the existing Wolfe Trap will still occur, where both hatchery and natural origin fish are collected, held and used as broodstock.

As indicated in the BA, reasonable and prudent measures to minimize harassment to species, in particular bull trout, at all NEOH facilities will include minimal handling and routine observation of fish condition. During the course of collection, if bull trout appear to be delayed in migration, or injured or dead bull trout appear in the trap, operators will immediately notify the Snake River Basin Office of the USFWS to review the need for modification to reasonable and prudent measures.

Imnaha Satellite Facility

Channel Alterations

Design changes to the proposed in-water components at the Imnaha Satellite Facility include:

- Replacement of existing intake with new structure in lieu of expansion
- Modification to weir design from a hydraulically operated weir and fish barrier to a pneumatically-controlled weir

Specific construction methods relative to each of the bulleted items above were described previously. In-water work will impact listed salmonids. However, the instream disturbance anticipated due to current designs will not result in increased impact to the channel or require additional riparian vegetation removal compared to that which was described in the BA. Cofferdams of similar size will be required for construction at the intake structure and weir locations. Construction methods regarding in-water work will be the same. Therefore, impacts to listed species due to channel alterations will remain the same. These impacts are reiterated below.

Construction will occur during ODFW's instream work window of July 15 through August 15. Construction of instream structures will temporarily delay migrant fish passage. Adult Chinook generally spawn immediately adjacent to the construction area beginning in mid-August (R. Zollman, NPT, pers comm., 10/16/02; B. Smith, ODFW, pers comm., 10/16/02), but migrants and potential early spawners, however unlikely, could be impacted during construction. Construction activities will, therefore, interrupt migration

and spawning of those adult spring/summer Chinook that are not needed for broodstock and are passed upstream for natural spawning. Juveniles that may rear in the area could be impacted.

Migrating bull trout are routinely captured at the Imnaha Satellite Facility between June and September (Buchanan et al. 1997), with most individuals passing upstream of the facility by late August. Delays to migrating bull trout may therefore occur during the early stages of in-water construction activities if migrants are late to move upstream. Delays to subadult bull trout emigration are not expected because the majority of individuals move downstream during late fall, outside of the instream work window.

Adult Imnaha steelhead are early spring spawners and will not likely be impacted by in-water construction. Kelts emigrate to the ocean soon after spawning and will not be affected. Steelhead juvenile out-migrants leave the Imnaha in spring and are not likely to be affected by instream work. However, younger juveniles may move upstream and downstream within the Imnaha and its tributaries during summer and fall and could use the construction area for rearing.

Instream construction of the weir during the current ODFW window will impact the passage of adult spring/summer Chinook, potentially stressing individuals. During construction, fisheries biologists will perform daily discrete bank surveys to determine if migrants are being delayed or impacted. If adverse impacts or delays occur during construction, facility managers will consult with the regulatory agencies to develop a plan to minimize adverse impacts.

Operation of Water Intake

The new intake will meet NOAA Fisheries screening criteria. Operations will be identical to those described in the BA.

Water Gains and Losses

As described in Section 3.5.3, the revised water budget for the Imnaha Satellite Facility includes a maximum surface water withdrawal of 20.3 cfs during the month of May. The original water budget as presented in the BA did not include any surface water needs during May for a variety of operational reasons as described previously. The proposed withdrawal of 20.3 cfs in May should have no measurable impact on instream flows within the diversion reach during this period since the historical mean monthly flow for May is 804 cfs. It should be noted that no water will be withdrawn during the month of May if broodstock collection is not possible due to high flows.

With the exception of the addition of surface water withdrawal during the month of May, no change in the water budget as presented in the BA is proposed; therefore, analysis of impacts to flow and affects to listed salmonids has been thoroughly addressed in the BA.

Water Quality

Discharges of chemical and organic pollutants at the Satellite Facility currently comply with federal and state water quality standards and guidelines. This compliance will continue after modifications are made at the facility. The current and proposed production program is under the threshold limit requiring an NPDES permit. Estimated effluent production at the facility as presented in the BA will not change.

Operation of Fish Traps, Ladders and Weirs

The existing Imnaha weir currently operates from mid May (earliest) through September, forcing all fish to enter the ladder and the adult holding ponds, where non–target species are sorted and returned to the river through the existing bypass pipeline. The new weir will operate over the same time period and treatment of trapped non-targets will remain the same as existing operations. However, operation of the new pneumatically-controlled weir introduces a new element to the site – impoundment. This weir, when inflated, will effectively act as a barrier to upstream migrations. Water will back up behind the inflated weir, resulting

in a temporary upstream impoundment. Sediment may accumulate behind the weir; however, the weir will be lowered following trapping operations and sediment will naturally be transported downstream. If sediment becomes an issue, the weir can be occasionally lowered to flush any accumulation. Impoundment may temporarily increase the wetted width of the stream immediately upstream of the structure; however, the created impoundment is anticipated to be minimal, resulting in a temporary one ft increase in surface water elevation. Because this weir is a pass through system, impacts to downstream flows are not anticipated.

During non-operational periods, the weir will be deflated and lie flat atop the substrate, allowing free passage upstream and downstream. During adult collection, downstream passage will be possible over the weir. It is anticipated that flow moving past the weir will create a natural scour pool on the downstream face of the weir, providing a plunge pool for fish. Downstream migrants that may be present during trapping include Snake River steelhead kelts and bull trout migrants or rapid turn around spawners.

During adult collection periods, upstream passage will be provided through the improved ladder (ladder improvements were described in the BA). This is essentially an existing condition as the ladder is currently used for upstream passage during trapping periods. However, operation of the existing weir during the latter half of May has only been possible on average 10% of the years of facility operation. The new weir has been designed to allow collection during higher flows; therefore, additional handling and upstream migratory delay may occur if hatchery staff is able to operate the weir during the latter half of May. As stated in the BA, fluvial bull trout migrate upstream past the Imnaha Satellite Facility from June through August. By September, most bull trout are upstream of the Imnaha Satellite Facility at unknown spawning sites near the headwaters; outmigrations generally occur from late September through November. Therefore, since bull trout generally migrate upstream after May, operation of the weir during May should not result in additional handling or take beyond that which was discussed in the BA.

Monitoring for passage efficiency at the new weir structure will occur in the first season of operation, and during any unusual flow scenarios (either extreme high or low flows). Monitoring of this structure is essential to assure impacts to fish species are not occurring as a result of the new weir. Visual observation of upstream and downstream migrants will be performed. Surveys will be performed daily in the vicinity of the weir and also in portions of the diversion reach. Corrective measures that ensure the survival of naturally reproducing adults must be immediately applied should passage problems occur with the weir. Consultation with the USFWS and NOAA Fisheries will be immediately initiated should passage problems be identified.

4.2.3 Effect Determination

Proposed project changes at the Lostine River Hatchery and Imnaha Satellite Facility sites will result in short term disturbance due to in-water construction activities that may affect listed species; however, proposed changes to in-water work will not result in take that exceeds levels previously discussed in the BA. Operation of the newly proposed fishway at the Lostine River Hatchery may impact non-target listed species due to migrational delays and handling; however, the potential for non-target species to experience such delays is minimized due to the fact that the facility is a volitional ladder and non-target fish may not find or enter the ladder. Operation of the newly proposed Imnaha Satellite Facility weir should not result in take levels that exceed those which were discussed regarding the previous weir design as presented in the BA. Therefore, proposed changes to the elements described herein are not anticipated to alter the effect determinations for any species from those presented in the BA. The project is still *likely to adversely affect* bull trout, spring/summer Chinook, and steelhead. Fall Chinook are likely extirpated from the Grande Ronde river basins; however, they may be present in limited numbers in the Imnaha River. If present, the effect determination for fall Chinook as a result of project changes is the same as presented in the BA (*likely to adversely affect*).

In addition, proposed project changes are not anticipated to alter the critical habitat effect determinations as presented in the BA for both steelhead and Chinook (*not likely to adversely affect*). The critical habitat effect determination for bull trout will change as compared to the BA since the status of critical habitat in the BA

was proposed, and it is now designated. Therefore, the recommended effect determination for designated bull trout critical habitat is *not likely to adversely affect*. Affects to bull trout critical habitat PCEs due to project construction and operation were addressed in the Bull Trout Matrix of Pathways and Indicators analysis (Appendix E of the BA). Project design changes as presented herein are anticipated to result in similar effects to PCEs as those previously analyzed.

As to cumulative effects, no change from the analysis in the original BA is warranted as no new undertakings by other entities in the affected areas have been identified.

Finally, in the BO issued in response to the project BA, NOAA Fisheries determined that the project *may adversely affect* Essential Fish Habitat (EFH) for Chinook salmon and coho salmon (coho are extirpated from the river systems). The proposed project changes will not alter this effect determination.

5.0 Effect Determination Summary

Table 6. Determination of Effects.

Federally Listed Species or Habitat	Status	Determination of Effects
Canada lynx	Threatened	No effect
Bald eagle	Threatened	May affect, but is not likely to adversely affect
Yellow-billed cuckoo	Candidate	No significant impact
Columbia River bull trout	Threatened	Likely to adversely affect
Critical habitat for Columbia River dps of bull trout	Designated[1]	Not likely to adversely affect
Snake River spring/summer Chinook salmon	Threatened	Likely to adversely affect
Snake River fall Chinook salmon	Threatened	Likely to adversely affect
Critical habitat for Snake River fall and spring/summer Chinook salmon	Designated	Not likely to adversely affect
EFH for Pacific salmon	Designated	May adversely affect
Snake River steelhead	Threatened	Likely to adversely affect
Critical habitat for Snake River steelhead	Re-Designated[1]	Not likely to adversely affect
Columbia spotted frog	Candidate	No significant impact
Slender moonwort	Candidate	No significant impact
Macfarlane's four o'clock	Threatened	May affect, but is not likely to adversely affect
Spalding's catchfly	Threatened	May affect, but is not likely to adversely affect
Howell's spectacular thelypody	Threatened	No effect

[1] Represents changes in critical habitat designations since original BA was issued

6.0 References Cited

Bellerud, B.L., et al. 1997. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon, 1996 Annual Report prepared for Bonneville Power Administration. Portland, Oregon.

Buchanan, D. V. Hanson, and R. Hooton. 1997. Status of Oregon's Bull Trout; Distribution, Life History, Limiting Factors, Management Considerations, and Status. Oregon Department of Fish and Wildlife, Portland, Oregon.

NOAA Fisheries. 2003. Endangered Species Act Section 7 Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Bonneville Power Administration Habitat Improvement Program (HIP) in the Columbia River Basin.

NOAA 2005a. Endangered and Threatened Species; Designation of Critical Habitat for 12 Evolutionarily Significant Units of West Coast Salmon and Steelhead in Washington, Oregon, and Idaho. http://www.nwr.noaa.gov/1salmon/salmesa/crithab/NWR-CHD-81205.PDF

NOAA 2005b. Endangered and Threatened Species; Designation of Critical Habitat for 12 Evolutionarily Significant Units of West Coast Salmon and Steelhead in Washington, Oregon, and Idaho. 70 FR 52629-52858. September 2, 2005.

ODFW. 1995. Biennial report on the status of wild fish in Oregon. ODFW, Portland, Oregon.

Piper et al. 1982. Fish Hatchery Management. USFWS. Washington D.C.

USFWS. 2001a. Endangered and threatened wildlife and plants; Final rule to list *Silene spaldingii* (Spalding's catchfly) as threatened. Federal Register: October 10, 2001 (Volume 66, Number 196) [Page 51598-51606].

USFWS. 2004. Lostine River Bank Stabilization Project (Phase 2), Wallowa River Subbasin, Wallowa County, Oregon – Formal Consultation (1-7-05-0187).

Appendix A

Project Photographs

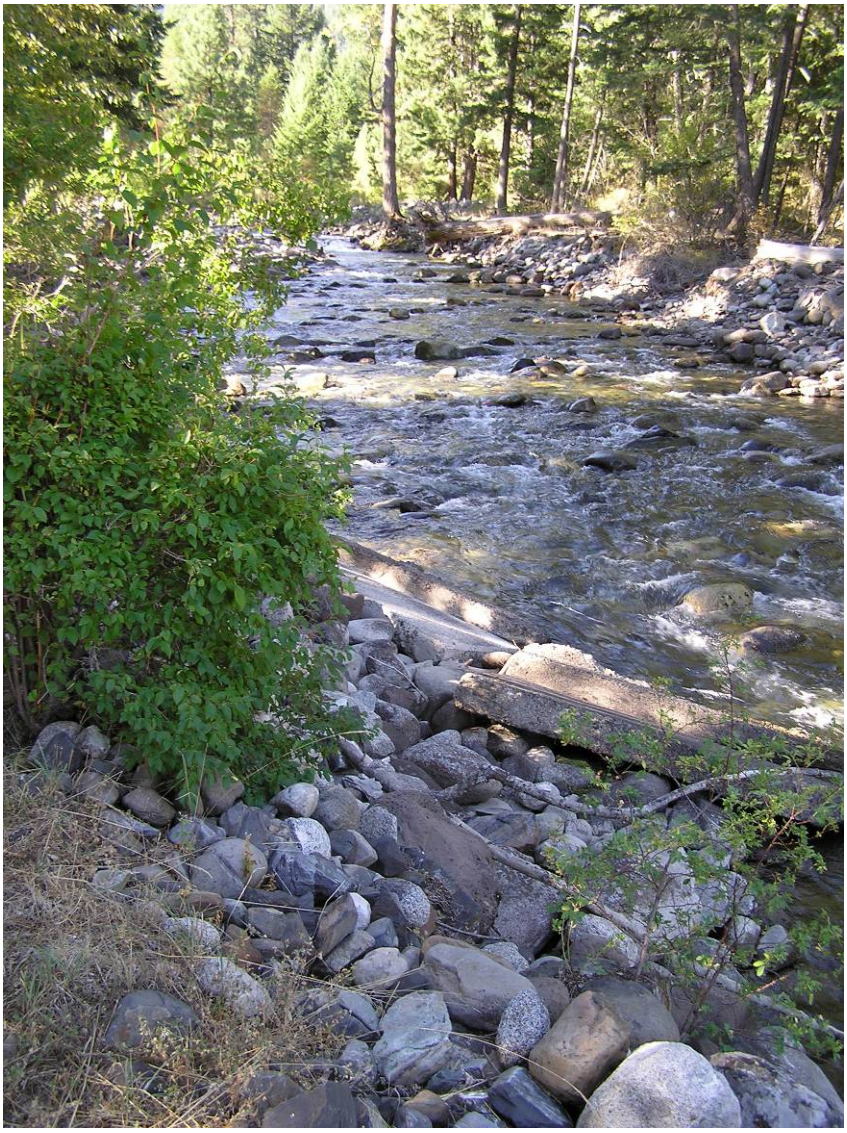

Photo A-1. New intake location for Lostine River Hatchery looking upstream, showing concrete slabs and riprap on bank.

Photo A-2. Lostine River Hatchery intake and access road corridor. Structures will be sited to avoid removal of mature trees.

Photo A-3. Existing Imnaha Satellite Facility intake structure; photo looking upstream showing heavily armored bank. Work at this location should extend approximately 20 ft upstream of the existing intake.

Photo A-4. Existing Imnaha Satellite Facility intake structure; photo looking downstream.

Photo A-5. Existing Imnaha Satellite Facility weir, photo facing downstream.

Photo A-6. Existing Imnaha Satellite Facility weir; photo facing upstream showing extensive riparian degradation on east (right) bank. Construction should not impact riparian resources along the bank as all construction should take place within existing disturbed areas.

Appendix B

Imnaha Satellite Facility USFS Approval Letters

United States Department of Agriculture | Forest Service | Wallowa-Whitman National Forest | Eagle Cap Ranger District
88401 Hwy. 82
Enterprise, OR 97828

File Code: 1500
Date: February 13, 2006

Ken Kirkman
Project Manager
Bonneville Power Administration
P.O. ox 3621, KEC-4
Portland, OR 97208-3621

Dear Mr. Kirkman:

The Wallowa-Whitman National Forest has reviewed recent design changes proposed for upgrading the fish weir at the Imnaha Satellite Facility, Northeast Oregon Hatchery Program, and feels the proposed changes will not create effects different from those already analyzed by the Grande Ronde-Imnaha Spring Chinook Hatchery Project Final Environmental Impact Statement (FEIS), DOE/EIS-0340, July 2004. There is, therefore, no need for additional analysis under National Environmental Policy Act (NEPA) or Wild and Scenic Rivers Act requirements. The design covered under the FEIS called for construction of a Chiwawa weir that would have required slight modifications to the existing concrete fish diversion weir to install. The new proposed design changes would install an Obermeyer weir instead of a Chiwawa weir, and like the Chiwawa weir would only require minimal modifications to the existing fish diversion weir.

The Snake River spring/summer chinook salmon native the Imnaha River are listed as threatened and are protected under the Endangered Species Act (ESA). Consultation on the effects to the environmental baseline and fisheries are covered under the August 25, 2003 Northeast Oregon Hatchery Program Grande Ronde-Imnaha Spring Chinook Hatchery Project Biological Assessement, and is considered adequate to address the effects of the proposed design change to the Imnaha Satellite Facility. If there are any questions regarding this decision, please call Mary DeAguero, District Ranger Hells Canyon National Recreation Area at (541) 426-5501.

Sincerely,

Mary C DeAguero

MARY C. DEAGUERO
HCNRA/Eagle Cap District Ranger

cc: Greg Haller, NEOH Project Leader

United States Department of Agriculture | Forest Service | Wallowa-Whitman National Forest | Wallowa Mountains Office and Visitor Center
88401 Hwy. 82
Enterprise, OR 97828

File Code: 1500
Date: February 14, 2006

Ken Kirkman
Project Manager
Bonneville Power Administration
PO Box 3621
KEC-4
Portland, OR 97208-3621

Dear Mr. Kirkman;

This letter is to clarify my letter dated February 13, 2006 in regards to The Wallowa-Whitman National Forest's recent review of design changes proposed for up-grading the fish weir at the Imnaha Satellite Facility, Northeast Oregon Hatchery Program. I would like to clarify that my previous letter includes all work to be completed in regards to the fish weir including the intake reconstruction which will occur within the existing footprint. The proposed changes will not create effects different from those already analyzed by the Grande Ronde-Imnaha Spring Chinook Hatchery Project Final Environmental Impact Statement (FEIS), DOE/EIS-0340, July 2004. There is, therefore, no need for additional analysis under National Environmental Policy Act (NEPA) or Wild and Scenic Rivers Act requirements.

If there are any questions regarding this decision, please call Mary DeAguero, District Ranger Hells Canyon National Recreation Area at (541) 426-5501.

Sincerely,

/s/ Mary C. DeAguero
MARY C. DEAGUERO
HCNRA/Eagle Cap District Ranger

cc: Monty Gregg
Haller
NEOH Project Leader