**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
BIN C15700
Seattle, WA 98115-0070

April 29, 2003

Shannon C. Stewart
Environmental Specialist
Bonneville Power Administration
Post Office Box 3621
Portland, Oregon 97208-3621

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Snyder Canyon Creek Mill Site Fish Passage Project (WRIA 30) (2002/01482).

Dear Ms. Stewart:

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended, 16 U.S.C. 1531, *et seq*. and the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996, the attached document transmits NOAA's National Marine Fisheries Service (NOAA Fisheries) Biological Opinion (Opinion) and MSA consultation based on our review of a proposal to fund a fish passage improvement project with the Yakama Nation Fisheries Program on Snyder Canyon Creek near Klickitat, Washington. Construction elements of the subject line project will occur in the Klickitat River watershed, in Klickitat County, Washington. The Bonneville Power Administration (BPA) determined that the proposed action was likely to adversely affect the Middle Columbia River steelhead *(Onchorynchus mykiss*) Evolutionarily Significant Unit, and requested formal consultation. NOAA Fisheries concurred with this determination, and initiated formal consultation on January 7, 2003.

This Opinion reflects the results of a formal ESA consultation and contains an analysis of effects covering the Middle Columbia River steelhead in the Klickitat River watershed, Washington. The Opinion is based on information provided in the Biological Assessment, a site visit on October 11, 2002, and additional information transmitted via telephone conversations and e-mail. A complete administrative record of this consultation is on file at the Washington Habitat Branch Office.

NOAA Fisheries concludes that implementation of the proposed project is not likely to jeopardize the continued existence of Middle Columbia River steelhead. In your review, please note that the incidental take statement, which includes Reasonable and Prudent Measures

and Terms and Conditions, was designed to minimize take.

The MSA consultation concluded that the proposed project may adversely impact designated Essential Fish Habitat (EFH) for chinook (*O. tshawytscha*) salmon. The Reasonable and Prudent Measures of the ESA consultation, and Terms and Conditions identified therein, would address the negative effects resulting from the proposed BPA funded actions. Therefore, NOAA Fisheries recommends that they be adopted as EFH conservation measures.

If you have any questions, please contact Diane Driscoll of the Washington Habitat Branch Ellensburg Field Office at (509) 962-8911 x 227 or Diane.Driscoll@noaa.gov.

Sincerely,

For Michael R Course

D. Robert Lohn
Regional Administrator

Enclosure

cc: Greg Johnson, WDFW
Will Conely, Yakama Nation Fisheries

# Endangered Species Act - Section 7 Consultation

# Biological Opinion

# And

# Magnuson-Stevens Fishery Conservation and Management Act

# Essential Fish Habitat Consultation

Snyder Canyon Creek Mill Site Fish Passage Project
2002/01482

Agency: Bonneville Power Administration

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Issued by: for Michael R Crouse Date: April 29, 2003

D. Robert Lohn
Regional Administrator

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## 1.0 INTRODUCTION

## 1.1 Background

This document transmits NOAA's National Marine Fisheries Service (NOAA Fisheries) Biological Opinion (Opinion) and Essential Fish Habitat (EFH) consultation under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), based on our review of a project to improve fish passage through an abandoned mill site in lower Snyder Canyon Creek near Klickitat, Washington. Snyder Canyon Creek is a tributary to the Klickitat River, entering at river mile (RM) 13.4 and includes the Middle Columbia River (MCR) evolutionarily significant unit (ESU) for threatened steelhead (*Oncorhynchus mykiss*). This area has also been designated as EFH for chinook (*O. tshawytscha*) salmon.

## 1.2 Consultation History

On December 12, 2002, NOAA Fisheries received a preliminary Biological Assessment (BA) from the Bonneville Power Administration (BPA) proposing to fund all or in part, a fish passage improvement project on Snyder Canyon Creek near Klickitat, Washington during the summer of 2003. The final BA and request for consultation was received on January 7, 2003. The BPA concluded that the project is likely to adversely affect MCR steelhead. After review and analysis, NOAA Fisheries concurred with that determination.

Existing conditions in lower Snyder Canyon Creek do not facilitate upstream passage for adult or juvenile steelhead. Passage is hindered or blocked by the State Route (SR) 142 culvert, a flume outfall, a 2,628-foot concrete flume, a low head dam, and two additional culverts upstream of the Mill site. Consultation for replacement of the SR 142 culvert has been completed and construction will take place during the summer of 2003 (NMFS 2002b). The proposed project will install grade control structures downstream of the existing flume, install baffles throughout the flume, remove the dam, reestablish a channel above the dam, and replace the upstream culverts with bridges to allow fish passage and provide access to almost 4 miles of habitat suitable for steelhead spawning and rearing.

The objective of the Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of listed species. The Opinion was completed pursuant to the Endangered Species Act (ESA) and its implementing regulations (50 CFR 402), and reflects the results of formal consultation under the ESA. The objectives of the EFH consultation is to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset those adverse effects.

Consultation was based on information acquired during a site visit on October 18, 2002, by Diane Driscoll with NOAA Fisheries and Greg Johnson from the Washington Department of Fish and Wildlife, (WDFW), in addition to the BA and subsequent telephone and email correspondence. Consultation was initiated on January 9, 2003 when NOAA Fisheries received a letter requesting consultation with the final BA describing the project.

## 1.3 Description of the Proposed Action

The BPA proposes to fund, in whole or in part, a fish passage improvement project in lower Snyder Canyon Creek at the site of the former Champion International Mill. The lumber mill was constructed in the early 1900's but it has been closed since a fire destroyed most of the buildings in 1998. Beginning at the mouth of Snyder Canyon Creek the stream is immediately confined under SR 142. Approximately 360 feet upstream of the mouth of Snyder Canyon Creek, the stream has been restricted to a 2,628-foot concrete flume. At the upstream end of the flume is a small, low head concrete dam, and upstream of the small dam are two culvert crossings. The flume outlet, flume, dam, and two upstream culvert crossings are all fish passage barriers. Upstream of all the barriers is approximately 4 miles of spawning and rearing habitat suitable for steelhead.

The proposed project will install grade control structures below the existing flume and install baffles throughout the flume. The project proponent will remove the dam and construct a channel upstream approximately 500 feet. Finally, the project will replace the two upstream culverts with bridges to allow fish access to approximately 4 miles of quality habitat in Snyder Canyon Creek.

The proposed project consists of five phases extending from just above the mouth upstream approximately 3,200 feet (0.6 miles) to the second culvert blocking fish passage (Stanton culvert). Herein, phases of the construction will be referred to as: Phase 1 (Mill Site Flume Outlet), Phase 2 (Mill Site Flume), Phase 3 (Mill Site Dam), Phase 4 (Maki Culvert), Phase 5 (Stanton Culvert).

### 1.3.1 Worksite Isolation and Handling Fish

Fish removal and salvage from the worksites in Snyder Canyon Creek will be conducted by WDFW biologists or other qualified fisheries biologists (e.g., Yakama Nation biologists). Additionally, fish salvage results will be documented in writing (see attached Appendix 1) and reported to NOAA Fisheries. Worksite isolation and fish removal and salvage activities will follow the protocol described in the Opinion issued for the Snyder Canyon Creek Culvert Repair Project (WHB-02-082) (NMFS 2002b) since all work from both projects will be done by the WDFW during the 2003 work season.

To ensure the protection of aquatic species, herding or salvage might be required. To reduce the potential for harm, the handling of fish will be limited to the extent possible. The WDFW District Fish Manager will be consulted before any herding or salvage activity and the BPA will ensure compliance with the conservation measures below. In addition, the salvage will be documented in writing (see attached Appendix I) and reported to NOAA Fisheries within two working days. Any fish captured will be released immediately into nearby free flowing water. During fish removal activities, the block nets will be left in place. Fish removal procedures are as follows (adapted from NOAA Fisheries 2001 and NOAA Fisheries 2002a):

1. Install block nets at upstream and downstream locations to isolate the entire affected stream reach and prevent fish and other aquatic wildlife from moving into the work area.

Block net mesh size, length, type of material, and depth will vary based on site conditions. Generally, block net mesh size is the same as seine material (approximately one-quarter inch stretched). Block nets are installed securely along both banks and in the channel to prevent failure during unforeseen rain events or debris accumulation. Some locations may require additional block net support such as galvanized hardware cloth, additional stakes, or metal fence posts. Block nets are left in place throughout the activity and may require leaf and debris removal to ensure proper function. Following initial environmental staff oversight, a staff person should be designated to monitor and maintain the nets. Crew supervisors, leads, or crew members may check these nets. The flow rate in the stream and the amount of leaves and other debris collected on the net will determine how often the nets need to be checked.

2. Dip, seine or fyke net exclusion procedures are as follows: Once the stream reach has been isolated, all attempts to remove fish and other aquatic life are made with the least amount of handling (Appendix I). Aquatic life is captured by hand or with dip nets and immediately put in dark colored five-gallon buckets filled with clean stream water. Net drags or seining through the isolated stream reach may also be used. Depending on the site, various lengths of one-quarter inch stretched nylon mesh minnow seines are used throughout the isolated stream reach. Seining follows modified protocol of Parametrix (1980) and Muckleshoot Fisheries Department (Warner and Fritz 1995). This protocol is summarized as follows:

   a. The seine is approximately three feet wide and of varying lengths with approximately 15 feet of rope attached to either end. Sets are conducted with one person on shore and one to two people working the other end of the net through the isolated stream reach area. Once the net is out and the lead line dropped to the bottom, the other end of the 15-foot line is brought to shore and both ends of the net are pulled in quickly in tandem. Fyke nets or minnow traps may also be used to exclude fish from the affected reach. Use of the traps depends on reach characteristics mentioned earlier.

   b. Electrofishing is employed when other methods prove ineffective. Use of electrofishing may be determined through permit requirements and site conditions. It may not be recommended in all situations. Any electrofishing will be conducted using the guidelines specified in *Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act* (NMFS 2000a) (http:www.nwr.noaa.gov/1salmon/salmesa/4docs/final4d/electro2000.pdf).

   c. No electrofishing is allowed in anadromous fish-bearing waters from October 15 to March 1 or in in resident fish-bearing waters from November 1 to May 15. To avoid contact with spawning adults or active redds, environmental staff must conduct a careful visual survey of the area to be sampled before beginning electrofishing. Captured fish must be handled properly. A healthy environment for the stressed fish must be provided. There should not be overcrowding in the buckets and holding time should be minimized. Large fish should be kept

separated from smaller fish to avoid predation during containment. Water to water transfers, the use of shaded or dark containers, and supplemental oxygen will be considered in designing fish handling operations.

3. Drag netting or seining through the isolated stream reach is the preferred technique. Use of hand or dip nets or electrofishing will only be done if other means of fish exclusion fail to remove all observed fish. After removing fish from the isolated reach, a flow bypass system will be set up using cofferdams (e.g., sandbags filled with pea gravel, ecology blocks) above and below the culvert and any streamflow present will be passed through a temporary bypass pipe. After the fish removal, coffer damming, and bypass, are completed, the standing water in the construction area will be pumped down using a screened intake pipe. All water intakes used for the project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated, and maintained according to NOAA Fisheries fish screen criteria (NMFS 1995 and 1996a).

4. The BPA and WDFW will ensure that these conditions are strictly followed. Any accidental injury or killing of listed species will be reported to BPA, WDFW and NOAA Fisheries within two working days of occurrence (Appendix I). Although fish kills are not expected to occur and are not authorized by this incidental take statement, all salmonid carcasses caused by the action will be collected and delivered to NOAA Fisheries to be identified at BPA's expense. Initial notification of fish mortality may be verbal, followed by a written in-water construction monitoring report (Appendix I [see Terms and Conditions 1.f]).

Worksite locations will consist of approximately 120-foot lengths of stream channel (or flume) at a time, with the exception of the channel restructuring upstream of the low head dam that is described in greater detail below. After the in-water work area has been isolated and fish removal has been completed, any water in the stream channel will be coffer dammed using gravel bags and redirected through a temporary bypass pipe. The bypass pipe will be of sufficient size to fit anticipated flows and allow fish passage. Summer flows at the mouth of the flume are generally less than one cubic foot per second (cfs) (Conely, personal communication, February 2003). The one exception to the 120-foot bypass length design is directly above the Mill site dam where a new stream channel will need to be excavated. The channel area to be excavated at this location is approximately 500 feet long and the entire reach will be isolated at once.

### 1.3.2 Flume Outlet

The stream channel immediately downstream of the flume outlet will be backwatered with log controls. Seven log weirs will be placed in the channel downstream of the flume to gradually step up the stream channel and provide upstream passage for all species and age classes of salmonids. In addition to providing fish passage into the flume, the controls will naturally widen the creek bed, which is currently channelized and incised. The log weirs will be backfilled with spawning gravel and will provide a 50% pool to riffle area for 100 linear feet of stream channel. Each control will consist of two logs pinned together with rebar and anchored on each end with concrete blocks and riprap. Rock size used for riprap will range from three-inch to 20-inch

diameter. The control is sealed using geolon fabric with round rock placed to hold the fabric and provide additional spawning size substrate. Material used to stabilize the fabric will range in size from coarse sand to three inches in diameter. Any areas disturbed during access or construction will be revegetated.

### 1.3.3 Mill Site Flume

Approximately 360 feet upstream of the mouth of Snyder Canyon Creek, the streamflow has been confined to a concrete flume that extends 2,628 feet upstream through the old mill site. For many reasons, WDFW does not plan to dismantle the flume at this time. Instead the project includes baffling the flume with concrete weirs. The flume varies from 15 to 30 feet wide. A typical weir for the site will be approximately 15 feet wide, eighteen inches thick at the base and taper to eight inches thick at the top. The amount of fill per weir is estimated to be 5.1 square feet. Approximately 159 weirs, spaced 15 feet apart, will be required for the entire flume, and 1,000 square yards of brushing and clearing will need to be done to stage equipment and gain access to the work area. Additionally, a 698-foot section of the concrete flume wall along the left bank will be removed and the bank will be sloped back and planted with native shrubs and trees. All areas disturbed during construction will be revegetated.

### 1.3.4 Mill Site Dam

At the head of the flume there is a small, low head concrete dam approximately three feet high. This dam is composed of earth fill and shotcrete with the remnants of wooden beams that once served as the foundation for the dam. Decades worth of sand, gravel, and cobbles have collected above the dam extending approximately 500 feet upstream and obscuring the original channel. The dam and beam structure will be removed and a new stream channel will be excavated approximately 500 linear feet upstream of the existing dam. The new channel will be approximately 20 feet wide and the banks will be sloped three feet horizontally to one-foot vertically for stability. Approximately 2,500 cubic yards of material will be excavated to construct step-pools, install woody debris in the channel for cover, and revegetate the banks with with native shrubs and trees. All excavated material will be placed at a suitable upland location to prevent erosion back into the stream channel.

### 1.3.5 Maki Culvert

Upstream of the flume and dam is an old culvert/bridge with a concrete floor. This culvert impedes fish passage because of the slope of the culvert and a perched outfall. The original deck, metal supports and concrete bottom will be removed and the concrete bottom will be replaced with 120 yards of streambed cobble and gravel. The existing concrete step and end walls will be removed and the banks revegetated. A new 40-foot long and 12-foot wide bridge will replace the original culvert crossing.

### 1.3.6 Stanton Culvert

Upstream of the Maki culvert is a 46-foot long, perched, pipe arch culvert. This culvert is also a problem because of slope and outfall drop. The BPA will remove and replace this culvert with a

bridge structure. After they remove the culvert, BPA will excavate the channel and place all associated fill material at a suitable upland site. Concrete bridge foundation slabs will serve as footings for the new 50-foot long by 12-foot wide bridge. Once they remove the culvert, approximately 160 yards of cobble and gravel material will be placed under the new structure. Previously removed fill material may be incorporated into the spawning gravel enhancement features described earlier.

### 1.4 Description of the Action Area

Under the ESA, the "Action Area" is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area of the action (50 CFR 402.02 and 402.14(h)(2)).

The action area includes the lower 0.6 miles of Snyder Canyon Creek, the abandoned mill site and old yarding areas now on private land. The effects of the action may extend downstream into the Klickitat River, however, summer and fall flows from Snyder Canyon Creek are historically low and contribute a very small amount to the Klickitat River. Because of the low flows in Snyder Canyon Creek and the relatively small amount of water it contributes to the Klickitat River, the downstream limit is expected to be the mouth of Snyder Canyon Creek. The action area also includes the adjacent riparian zone within the construction area and all areas affected by the project including the staging area and roadways. At present, there is no riparian area through the mill site where the stream is confined to a concrete flume, and above the mill site the stream is entrenched, limiting the riparian area to but a few feet on either side of the channel.

## 2.0. ENDANGERED SPECIES ACT

### 2.1 Biological Opinion

#### 2.1.1 Status of Species and Habitat

The listing status and biological information for the NOAA Fisheries listed species are described in Table 1.

| Species (Biological Reference) | Critical Habitat Designation | Listing Status Reference |
|---|---|---|
| Steelhead from Washington, Idaho, Oregon and California, (Busby *et al.* 1996). | No critical habitat designated at this time**.** | The MCR ESU is listed as Threatened under the ESA by the NMFS, (March 25, 1999 64 FR 14517). |

Table 1. References to Federal Register Notices containing additional information concerning listing status, and biological information for listed and proposed species considered in this biological opinion.

The information presented below summarizes the status of species and ESUs that are the subject of this consultation.

Middle Columbia River steelhead were listed as threatened under the ESA on March 25, 1999 (64 FR 14517). In Washington, the MCR steelhead ESU includes summer steelhead in tributaries to the Columbia River above the Wind River in Washington and the Hood River in Oregon upstream to include the Yakima River, Washington (Busby *et al.* 1996). Steelhead of the Snake River Basin are not included.

The ESU is within the larger Columbia Basin Ecoregion (Omernik 1987). The climate in this area includes extremes in temperatures and precipitation, with most precipitation falling in the mountains as snow. Streamflow is provided by melting snowpack, groundwater, and runoff from alpine glaciers.

The region includes some of the driest areas of the Pacific Northwest, generally receiving less than 16 inches of precipitation annually. Summer steelhead are widespread throughout the ESU; winter steelhead occur in Mosier, Chenowith, Mill and Fifteenmile creeks, Oregon, and in the Klickitat and White Salmon Rivers, Washington. The Klickitat River is unusual in that it produces both summer and winter steelhead, and the summer steelhead return to freshwater after 2 years in oceanic waters (Busby *et al.* 1996). The John Day River probably represents the largest, native, natural spawning stock of steelhead in the region (NMFS 2000b). A nonanadromous form (resident rainbow trout) co-occurs with the anadromous form in this ESU; information suggests that the two forms may not be isolated reproductively, except where barriers are involved (NMFS 2000b).

All steelhead in the Columbia River Basin upstream from the Dalles Dam are summer-run, inland steelhead (Busby *et al.* 1996). Summer steelhead generally return to freshwater between May and October after spending one or, more commonly, two years in oceanic waters (Busby *et al* 1996, Wydowski and Whitney 1979). Returning steelhead in the Columbia River generally spend an additional year in freshwater before spawning (Wydowski and Whitney 1979). In Washington, most populations begin spawning in February or March (Busby *et al.* 1996). Depending on water temperature, steelhead eggs incubate for one and one-half to four months before hatching (August 9, 1996, 61 FR 41542). In wild populations, juveniles generally migrate to sea at age two, but hatchery conditions permit steelhead to smolt after only a single year (Wydowski and Whitney 1979).

In 1991, Nehlsen *et al.* identified six stocks of steelhead within the MCR ESU as at risk of extinction or of special concern. The Walla Walla River stock was identified as of special concern. Several factors have contributed to the decline of MCR steelhead including habitat degradation through grazing and water diversion, over harvest, predation, hydroelectric dams, hatchery introgression, drought and other natural or human induced factors (Busby *et al.* 1996). Estimates of historical, pre-1960s abundance for the MCR ESU are available for the Yakima River only. The estimated pre-1900 run size in the Yakima River is 80,000 to 100,000 with the recent 5-year average (1996-2000) of 1,059 wild summer steelhead (Sampson *et al.* 2000; WDF and WDW 1993). If we assume that other basins had comparable run sizes for their drainage areas, the total historical run size for this ESU might have been in excess of 300,000. The current natural run size for the MCR ESU might be less than 15% of estimated historical levels.

*Klickitat River Watershed*. Summer and winter steelhead are native to the Klickitat River subbasin. Accurate historic estimates of steelhead returns to the Klickitat River Basin do not exist. The historical distribution of steelhead spawning in the watershed is also unknown but spawning surveys by the Yakama Nation in the spring of 2002 found several adult steelhead in the flume of Snyder Canyon Creek and one adult upstream of Stanton culvert barrier (Sharp, personal communication, March 2003). However, no spawning or redds were observed. Little is known about the small winter run of steelhead. Winter-run fish are thought to migrate into the river from January to May, peaking in March. Winter-run spawning is thought to occur from March through June, from just above the Columbia confluence to the Little Klickitat confluence (Phelps *et al.* 2000). Both the winter-run and the summer-run are included in this MCR steelhead ESU but only the summer run are listed.

The proposed action would occur within known habitat for MCR steelhead. Defining specific river reaches that are essential for steelhead is difficult because of the low abundance of the species and of our imperfect understanding of the species' freshwater distribution, both current and historical (February 16, 2000, 65 FR 7764). Essential features of steelhead habitat include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions. Good summaries of the environmental parameters and fresh water factors that have contributed to the decline of steelhead can be found in reviews by Pauley *et al.* (1986), Busby *et al.*(1996), and Spence *et al.* (1996).

### 2.1.2 Evaluating the Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR 402.02. NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of defining the biological requirements of the listed species, and evaluating the relevance of the environmental baseline to the species current status (*The Habitat Approach, Implementation of Section 7 of the Endangered Species Act for Actions Affecting the Habitat of Pacific Anadromous Salmonids*, (NMFS 1999) (available online at www.nwr.noaa.gov/1habcon/habweb/pubs/newjeop9.pdf)).

Recovery planning will help identify feasible measures that are important in each stage of the salmonid life cycle for conservation and survival within a reasonable time. In the absence of a final Recovery Plan, NOAA Fisheries must ascribe the appropriate significance to actions to the extent available information allows. NOAA Fisheries intends that recovery planning identify areas/stocks that are most critical to species conservation and recovery from which proposed actions can be evaluated for consistency under section 7(a)(2).

#### 2.1.2.1 Biological Requirements

The first step in the methods NOAA Fisheries uses when applying the ESA section 7(a)(2) to the listed species considered in this Opinion is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species within the action area, NOAA Fisheries starts with the determinations made in its original decision to list the species for protection under the ESA. Additionally, the assessment will consider any new information or data that is relevant to the determination.

The relevant biological requirements are those necessary for MCR steelhead to survive and recover to naturally reproducing population levels at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt and survive environmental variations, and allow them to become self-sustaining in the natural environment.

Biological requirements include the sustained presence of natural habitat forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation. NOAA Fisheries has related the biological requirements for listed salmonids to a number of habitat attributes, or pathways, in the Matrix of Pathways and Indicators (MPI, NMFS 1996b). These pathways (Water Quality, Habitat Access, Habitat Elements, Channel Condition and Dynamics, Flow/Hydrology, and Watershed Conditions) indirectly measure the baseline biological health of listed salmon populations through the health of their habitat. Specifically, each pathway is made up of a series of individual indicators (e.g., indicators for Water Quality including temperature, sediment/turbidity, and chemical contamination/nutrients) measured or described directly (NMFS 1996b). Based on the measurement or description, each indicator in the MPI can be classified within a category according to quality of its functional condition (the "properly functioning condition" (PFC)

framework): (1) properly functioning, (2) at risk, or (3) not properly functioning. Properly functioning condition is defined as "the sustained presence of natural habitat forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation."

For the proposed action the specific biological requirements to be affected in various degrees over the entire length of the project will be habitat access, substrate, large woody debris, pool frequency and quality, width to depth ratio, streambank condition, floodplain connectivity, disturbance regime and riparian reserves.

#### 2.1.2.2 Environmental Baseline

The environmental baseline represents the present set of basal conditions to which the effects of the proposed action are then added. Environmental baseline is defined as "the past and present impacts of all Federal, State, and private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or informal section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process" (50 CFR 402.02).

The Yakama Indian Nation reservation occupies the northern 56% of the Klickitat River watershed. Approximately 90% of the non-reservation land is privately held. Approximately 75% of the land is forested, and is mostly managed for commercial timber production and grazing. The deeply incised Klickitat River has remained relatively isolated from direct shoreline development over most of its length. However, floodplain roads, both abandoned and active, have caused channelization and constriction problems. Shoreline development is occurring with increasing regularity along the Highway SR 142 corridor between RM 0.0 and 19.0 of the mainstem. An abandoned paved floodplain road hugs the west bank of the Klickitat River from RM 14 to 31. Lower basin tributaries historically provided steelhead spawning and rearing habitat. Past and continuing management practices have left most tributary drainages severely degraded.

The Klickitat River arises at about 5,000 feet (1,525 meters) elevation and flows just over 95 miles (152 km) to the Columbia River at Lyle, Washington. Major tributaries include Swale Creek, Little Klickitat River, Outlet Creek, Big Muddy Creek, West Fork Klickitat River, and Diamond Fork. The climate can be characterized as a hybrid of that found on the east and west sides of the Cascades, because of the watershed's position at the head of the Columbia Gorge. A climatic gradient exists from the northwest (cooler, wetter) to the southeast (hotter, drier), portions of the watershed. Precipitation ranges from 140 inches on Mount Adams to 15 inches on the southeastern plateau with 75 to 85% falling between November and May; a persistent snowpack contributes runoff to some tributaries and the mainstem far into the drier portion of the year (WSCC 1999).

Anadromous fish access to lower Snyder Canyon Creek is partially blocked by several man-made structures. At the mouth passage is hindered by the SR 142 culvert followed by the flume outfall, the flume itself, a low head dam and two more culverts farther upstream. Section 7 consultation on an action to replace the SR 142 culvert at the mouth of Snyder Canyon was

completed October 15, 2002 and the work required will take place the summer of 2003. The mill was constructed in the early 1900's and operated until 1998 when fire destroyed most of the buildings. The Washington State Department of Ecology (DOE) conducted field studies in 1997, 2001 and 2002 to determine the status of hazardous materials in the soil and groundwater. In 1998 the site was ranked as "two" on the DOE site hazard assessment (a scale of one to five with a "one" being "high concern" and a five as "low concern"). Klickitat County and DOE are currently discussing the future management of the area. The flume is a 15-foot wide, 2,628-foot long concrete structure, built as part of the abandoned Champion Mill complex, and forms a depth and velocity barrier to all anadromous species. Upstream of the flume is a low head dam and two culverts that block or hinder fish passage. Approximately 4 miles of high quality habitat for coho and steelhead exist above the barriers. Full restoration would involve removal of the concrete sluiceway and creation of a natural channel and riparian zone. At this time, complete restoration of the mill site is not being considered because of cost and continued concerns regarding disturbance of contaminated soils beneath the concrete foundations. The proposed project will improve upstream access through installation of baffles, removal of the low head dam, construction of a new channel, and replacement of the two upstream culverts with bridges. At completion, this project will restore access to almost 4 miles of steelhead habitat.

Stream habitats within the action area include a few low gradient riffles and a very long glide as the stream flows through the concrete flume. The only pool-type habitat is located at the outfall drops of the flume and the two culverts. Refugia and off-channel habitat is non-existent because of confinement to a concrete flume and entrenchment of the channel above the flume. Woody vegetation for most of the stream channel is also non-existent. Narrow strips of riparian vegetation can be found along the streambanks above and below the flume, however, as the stream flows through the mill site it is surrounded by concrete. Lack of ability to access the floodplain contributes to the downcutting and entrenchment. In terms of the MPI indicators the action area is considered "not properly functioning" or "at risk" (NMFS 1996b) relative to all habitat attributes.

#### 2.1.2.3 Factors Affecting the Species Environment within the Action Area

Section 4(a)(1) of the ESA and NOAA Fisheries listing regulations (50 CFR 424) set forth procedures for listing species. The Secretary of Commerce must determine, through the regulatory process, if a species is endangered or threatened based upon any one or a combination of the following factors: (1) the present or threatened destruction, modification, or curtailment of its habitat or range, (2) overutilization for commercial, recreational, scientific, or educational purposes, (3) disease or predation, (4) inadequacy of existing regulatory mechanisms, or (5) other natural or human-made factors affecting its continued existence.

The proposed action includes activities that would have some level of effects with short-term impacts from category (1). The characterization of these effects, both positive and negative, and a conclusion relating the effects to the continued existence of the subject species of this consultation are provided in Section 2.1.3.

Among the concerns regarding the species environment throughout the Klickitat River watershed are poor water quality, fish passage barriers, low habitat complexity, loss of floodplain function

and impaired riparian function. Lack of access to potential habitat because of the presence of natural barriers to migration has been identified in previous reports as a major limitation of the production potential of the Klickitat watershed. Water withdrawals on Swale Creek and the Little Klickitat River have resulted in low season flows that are inadequate to support anadromous or resident fish populations. High water temperature problems have been identified in Butler Creek, Swale Creek, and the Little Klickitat River resulting in placement on the state "water quality impaired" (303(d)) list for temperature.

Overall, the baseline conditions in the Klickitat watershed are degraded. As stated above, few of the habitat indicators are properly functioning in the action area.

### 2.1.3 Effects of the Proposed Action

The action area is currently unusable by all but a "hardy few" steelhead that have been observed infrequently above the mouth of Snyder Canyon Creek (Sharp, personal communication February 2003). Therefore, since only a few steelhead have been observed in the action area in the last few years, the fish passage improvement proposed for lower Snyder Canyon Creek is likely to have a temporary adverse effect on MCR steelhead as determined by the BPA. However, the number of steelhead that may be encountered in lower Snyder Canyon Creek during construction is expected to be few, if any.

The ESA implementing regulations define "effects of the action" as "the direct and indirect effects of an action on the species or habitat together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline." Direct effects are immediate effects of the project on the species or its habitat, and indirect effects are those caused by the proposed action and are later in time, but are still reasonably certain to occur (50 CFR 402.02).

#### 2.1.3.1 Direct Effects

Direct effects result from the agency action and include the effects of interrelated and interdependent actions. Future Federal actions that are not direct effects of the action under consideration (and not included in the environmental baseline or treated as indirect effects) are not evaluated.

Since no spawning has been observed in the stream, the only steelhead (juvenile or adult) that may be affected would be individuals migrating through the Klickitat River and entering the stream for resting and feeding. While the likelihood is considered small, since the Klickitat River is a migratory corridor it is possible that a few juvenile or adult steelhead may inhabit the action area during the proposed construction periods. Generally, the direct effects are related to the duration of construction activities in or adjacent to Snyder Canyon Creek. The negative effects associated with the proposed project are likely to be short in duration and will be minimized through use of specific construction techniques and restrictions in timing and duration of construction.

#### 2.1.3.1.1 Worksite Isolation and Fish Handling

To reduce the likelihood of exposing fish to construction activities, the project includes a series of techniques to isolate fish from the worksite. These include physically blocknetting the work area to move fish away, capture and moving residual fish observed in the blocked work area, and then electrofishing to locate any remaining fish. Although these techniques are intended to reduce the number of fish that will encounter construction effects, each of these activities can injure or kill fish. However, use of trained personnel and adherence to NOAA Fisheries protocols (NMFS 2000a) will reduce, if not avoid the likelihood of harming steelhead.

The temporary diversion of the creek through a culvert will cause a short-term loss of benthic invertebrate habitat. Therefore, any modification of the streambed (temporary dewatering or disturbance) will affect the benthic invertebrate community. The biological effect of episodic inputs has generally been found to be temporary. Rapid recovery in the action area is expected by invertebrate drift from upstream reaches. Based on the timing of the activity, temperature and stream flow, invertebrate recolonization could occur within two weeks after completion of instream activity (Allan 1995; Waters 1995). As a result, it will be difficult, if not impossible to attribute any harm to steelhead from the temporary loss of invertebrate food items.

Isolating the work area and temporarily diverting the creek can strand juvenile steelhead and fish handling can increase plasma levels of cortisol and glucose in fish (Hemre and Krogdahl 1996, Frisch and Anderson 2000). Further, when poorly done, electrofishing can injure or kill juvenile or adult steelhead. Physical injuries from electrofishing include internal hemorrhaging, spinal misalignment, or fractured vertebrae. Also, the diversion of water through a culvert past the isolated work area could impede the movement of steelhead. The project proponent proposes several measures to minimize or avoid these effects. As a threshold matter, the in-water work window of June 15 to September 30 is prior to adult steelhead migration and spawning and after downstream smolt migration. Best Management Practices (BMPs) incorporated into the project include capture and relocation of fish that are not moved from the work area by the initial blocknetting. Thereafter, electrofishing will locate fish that could not be observed during blocknetting. To reduce or avoid the possibility of harm from electrofishing, the project proponent will adhere to NOAA Fisheries electrofishing guidelines (NMFS 2000a) and use a qualified biologist to ensure the safe capture, handling, and release of fish. Finally, in the unlikely event that migrating fish are present during the time the worksite is isolated, the bypass culvert through which the diverted stream will flow around the work area will be sized and installed in a manner to ensure safe fish passage.

#### 2.1.3.1.2 Water Quality

The project includes construction activities (streambank grading, channel excavation, installation of weirs, placement and removal of dewatering barriers and the temporary bypass culvert, removal of low-head dam, removal of upstream culverts) that could cause short-term increases in turbidity and sediment mobilization during and immediately after construction. Deposition of fine sediment can significantly degrade instream spawning habitat, reduce survival of steelhead from egg to emergence (Phillips *et al.* 1975), reduce intergravel cover (Spence *et al.* 1996), and reduce the productivity of benthic organisms as food for fish. Suspended sediments can cause

sublethal effects such as elevated blood sugars and cough rates (Servizi and Martens 1992), physiological stress, and reduced growth rates. Elevated turbidity levels can reduce the ability of salmonids to detect prey, cause gill damage (Sigler *et al.* 1984, Lloyd *et al.* 1987), and cause juvenile steelhead to leave rearing areas (Sigler *et al.* 1984). Additionally, short-term pulses of suspended sediment have been shown to influence territorial, gill-flaring, and feeding behavior of salmon under laboratory conditions (Berg and Northcote 1985).

The project incorporates measures to reduce, if not avoid these effects, including restricting timing and duration of construction, and the use of temporary erosion and sediment control measures. Construction methods will ensure that turbidity will not extend beyond 100 feet downstream of the project area for flows up to 10 cfs at time of construction (the expected flow is less than 10 cfs as described in WAC-201-100 and WAC-201-110) (WDOE 1997). The use of a mixing zone is intended for brief periods of time (a few hours or a few days) and is not intended as authorization to exceed turbidity standards for the duration of the project. Additionally, a mixing zone is only allowed after the implementation of appropriate best management practices to avoid or minimize disturbance of sediment. Snyder Canyon Creek contributes a relatively small amount of flow to the Klickitat River, therefore, any sediment mobilized and transported downstream is not likely to be observable within a few feet of the confluence. Steelhead are not expected to be present in Snyder Canyon Creek during construction. However, the action is not expected to generate turbidity levels high enough to injure any steelhead that might be present. Additionally, any deposition within the action area will be flushed out either when flow is reestablished or during the next high flow event (rain or snowmelt). Numerous studies have indicated that benthic invertebrate abundance is reduced by deposited sediment, but drift from upstream rapidly recolonized the affected area (Barton 1977; Reed 1977; Chisolm and Downs 1978; Waters 1995). The temporary increase in turbidity will not be additive to the environmental baseline over the long-term.

#### 2.1.3.1.3 Disturbance of Streambed

The project includes placement of dewatering barriers, temporary culverting of the stream channel, removal of culverts and portions of the concrete streambank, construction of a new channel, and installation of weirs and woody debris. Each of these activities can disturb the substrate or streambanks of Snyder Canyon Creek. Work within the stream channel is likely to mobilize existing sediment and displace benthic fauna in the immediate area. We discuss impacts of increased turbidity and sediment deposition under Section 2.1.3.1.2 (Water Quality, above). Additionally, the use of heavy equipment in the riparian areas and within the streambed might cause compaction of soils resulting in reduced infiltration at the project site. Such compacting decreases the stability of the banks, and reduces recruitment of riparian vegetation, which results in increased deposition of fine sediments into the river.

While it is unlikely that the instream work will affect a spawning habitat (WDFW has observed no spawning habitat at the project site), instream work with mechanical equipment may harm fish by compacting and homogenizing the substrate and temporarily reducing the diversity of a benthic habitat in the streambed. Minshall (1984) has recognized and extensively researched the importance of the trophic relationship between benthos and fish productivity. Minshall (1984) pointed out that benthos abundance is least in homogeneous sand or silt or in large boulders and

bedrock; abundance is greatest in the mixture of heterogeneous gravel, pebbles, and cobbles.

To minimize the disturbance of the streambed, the contractor will stay within the designated work area and access routes. The BPA will perform construction in a manner consistent with the above-mentioned criteria for water quality.

The project includes the creation of pools in the flume outlet, the flume itself, and in the new channel constructed above the low head dam that they are removing. In all locations additional substrate material, sized appropriately for spawning, is being added to the channel. Mechanical equipment for culvert removal and placement of weirs will be done from the streambanks, and heavy equipment will be limited to that with the least adverse effects on the environment. In its present condition, lower Snyder Canyon Creek provides no spawning habitat and hinders or blocks access to appropriate spawning habitats found upstream. Therefore, disturbance of the streambed to provide passage and increase the amount and quality of resting and rearing habitat will result in long-term improvements in streambed conditions within the action area.

#### 2.1.3.1.4 Alteration of Streambanks and Riparian Vegetation

A stream's physical habitat is determined mainly by associated hill slopes and riparian vegetation. Riparian vegetation generally links terrestrial and aquatic ecosystems, influences channel processes, contributes organic debris to streams, stabilizes streambanks, and modifies water temperatures (Sullivan *et al.* 1987; Gregory *et al.* 1991). Loss of vegetation might reduce allochthonous inputs, e.g., leaves from trees, to the stream. Woody debris provides essential functions in streams including the formation of habitats. Additionally, the removal of streambank vegetation can decrease streambank stability and resistance to erosion.

The BPA will conduct brushing and clearing of approximately 1,000 square yards of vegetation to stage equipment and gain access to the stream channel for placement of log weirs below the flume outlet. They will mow or otherwise treat native vegetation to retain the existing root structure and maintain soil stability on the site. The remaining four phases of the project are all accessible and will not require removal of the minimal vegetation presently established. During construction they will cover disturbed or exposed soils with straw to prevent erosion and replant with native grasses or clover for immediate protection. The BPA will plant young alder bare root stock and willow cuttings to establish healthy riparian processes. The overall effect to MCR steelhead will be a short-term loss and a long-term improvement in the structure and function of riparian habitat.

#### 2.1.3.1.5 Interdependent and Interrelated Effects

Interdependent actions are actions that have no independent utility apart from the primary action. Interrelated actions are those actions that are part of the primary action and depend on the primary action for their justification (50 CFR 404.02). There are no interdependent or interrelated actions associated with this project. The project will not result in additional actions that lack independent utility apart from the project.

### 2.1.3.2 Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur (50 CFR 402.02). Indirect effects can occur outside the area directly affected by the action. Indirect effects can include other Federal actions that have not undergone section 7 consultation but will result from the action under consideration. These actions must be reasonably certain to occur, or they are a logical extension of the proposed action.

#### 2.1.3.2.1 Changes in Fluvial Transport, Channel Morphology, and Complexity

The present condition of lower Snyder Canyon Creek provides only a small amount of resting habitat for adults when flows allow access. The flume outfall, the flume itself, the low head dam and associated channel obstructions, and the two culvert obstacles prevent access and use of all but a few hundred feet of the entire subwatershed. The removal of passage obstacles, construction of an additional channel above the dam and the increase in habitat complexity from placement of wood and addition of cobbles and gravels will open up more than 4 miles of habitat.

Channels that have been unaffected by human activities retain suitable water temperatures for the organisms that have evolved in that location. Such channels will have adequate shading, good cover for fish, minimal temperature variations and abundant organic matter input such as leaves, twigs and wood. In contrast, channelized streams tend to have increased water temperatures, less shading from trees, little cover for fish, greater fluctuations in stream temperature and less organic matter input. Natural channels have diverse habitats with varying water velocities as the morphology changes between riffles and pools. The sediment on the channel bottom is sorted and provides many microhabitats for organisms. In contrast, straightened channels tend to consist mostly of riffles and have unsorted gravels that limit the types of habitat available. The diverse nature of natural channels provides resting areas and slow water refugia during high flow. With less structural diversity, channelized systems have minimal resting areas and organisms are easily swept away during high flows. In low flow periods, natural channels have sufficient water depth to support fish and aquatic species during the dry season. On the other hand, channelized systems may have insufficient depth to sustain required temperatures and dissolved oxygen to sustain life.

The completion of the proposed action will result in significant improvement in the structure and function (fluvial transport, channel morphology, instream and riparian habitat complexity) of the lower 0.6 miles of Snyder Canyon Creek.

### 2.1.3.3 Population Level Effects

Both long and short-term trends in abundance of naturally spawning steelhead are declining in the MCR ESU as a whole (Busby *et al.* 1999). Especially severe declines occur on the Walla Walla River at Nursery Bridge Dam, where the numbers of summer steelhead have been decreasing by almost 17% per year from 1993-1998 (Greer 1998, cited in Busby *et al*. 1999). Short-term trends (1987-1997) in summer steelhead abundance on John Day River tributaries range from one to 21% declines per year. The greatest declines in abundance over the past 10 years have occurred on the mainstem of the John Day river (21%) and on the Deschutes River

at Sherrars Falls (12%) (Busby *et al*. 1999, Table 7).

Results of decline analysis for the MCR steelhead ESU overall shows a median population growth rate (lambda) over the base period ranges from 0.88 to 0.75, declining as hatchery fish reproduction increases (McClure *et al.* 2000, Table B-1). NOAA Fisheries also estimated the percent increase in lambda required to reduce the risk of a 90% decline in 48 years ranges from zero percent for the Yakima River stock to12% for the Deschutes River stock, assuming no hatchery fish reproduction. If hatchery fish are assumed to reproduce at the same rate as wild fish, the percent increase required to prevent a 90% decline in 48 years ranges from zero percent for the Yakima River stock to 32% for the Deschutes River stock (McClure *et al.* 2000, Table B - 9).

Extensive habitat blockages, water diversions, altered water flow and temperature regimes, and the resulting loss of spawning and rearing habitat for steelhead in the MCR ESU have combined to result in a powerful threat to its persistence. At least two extinctions of steelhead populations have been documented in this ESU (in the Crooked and Metolius Rivers), and the continuing declines in extant populations both with and without hatchery influence are a source of concern.

In the short-term the proposed action will have construction-related adverse affects on water quality, in-stream habitat, and riparian reserves. In the long-term, however, the project will result in beneficial affects to floodplain connectivity, in-stream habitat, and riparian reserves. Additionally, the timing and duration of in-stream work activities will minimize the affects on MCR steelhead. The proposed action is being conducted specifically to benefit MCR steelhead, and is considered unlikely to negatively influence population trends or risks in the action area.

### 2.1.4 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For this analysis, cumulative effects for the general action area are considered. Separate ESA section 7 consultations will review future Federal actions, including the ongoing operation of hatcheries, fisheries, and land management activities.

The BPA does not anticipate subsequent residential or commercial development within the shoreline zone near the project because of regulatory constraints and the Champion Mill site condition. They anticipate cumulative effects to MCR steelhead from the foreseeable future state and local activities affecting the Klickitat River and its shoreline area to be limited. We have consulted on an additional project on to remove a passage barrier at the mouth of Snyder Canyon Creek during the 2003 work season (NMFS 2002b). We know of no other projects occurring in the action area during the same period. NOAA Fisheries assumes that non-Federal land owners in those areas will also take steps to minimize or avoid land management practices that will result in the take of MCR steelhead. Section 9 of the ESA prohibit such actions.

### 2.1.5 Conclusion

NOAA Fisheries has determined that the effects of the proposed action will not jeopardize the continued existence of MCR steelhead. "Jeopardize the continued existence of the species" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. The proposed action consists of construction activities that will affect steelhead and their habitat. The action also consists of measures that lower the likelihood that any of the project affects will kill or injure individual fish. Furthermore, BPA has designed the new structures to alleviate the detrimental effects of the existing stream condition and enable improved function of certain habitat creating processes along the lower 0.6 miles of stream.

Construction activities include isolating the worksite from the stream and techniques to remove residual fish from the work area. These measures will temporarily interrupt the functional processes of the stream channel at the worksite, and fish removal techniques can injure or kill individuals. However, isolating the worksite ensures no fish will experience the adverse affects of in-channel work, and they intend the handling techniques to reduce the stressful affects of capture and removal. Furthermore, we confine project timing to the time of year when the least number of fish are likely to be present in the action area, diminishing potential harm as a threshold matter. Finally, the action calls for the use of BMPs to address the likelihood and extent that construction will affect steelhead. These practices include: 1) timing restrictions related to in-water construction to minimize impacts to fish and their habitat, 2) removal of existing passage barriers, 3) placement of weirs, wood and substrate material to create pool habitat providing cover and resting areas for all aquatic species.

The proposed action will improve stream channel structure and function over a 0.6 mile length of the stream channel and provide access to approximately 4 miles of habitat for anadromous and resident fish. Based on the factors listed above, NOAA Fisheries concludes that the proposed action is not likely to impair properly functioning habitat. On the contrary, the entire purpose of the project is to improve the functioning of already impaired habitat and provide access to existing functional habitat. Furthermore, NOAA Fisheries concludes that the proposed action is unlikely to adversely influence existing population trends or risks in the action area and could result in an incremental improvement in the population numbers and distribution. Therefore, the proposed action is not likely to appreciably reduce MCR steelhead numbers, reproduction, or distribution in this ESU.

### 2.1.6 Reinitiation of Consultation

The BPA must reinitiate consultation if: (1) the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded, (2) new information reveals effects of the action may affect listed species in a way not previously considered, or (3) a new species is listed or Critical Habitat is designated that may be affected by the action (50 CFR 402.16). The BPA must monitor the implementation of listed reasonable and prudent measures and terms and conditions of the incidental take statement. The BPA must reinitiate consultation if elements of the proposed project are carried out in a manner that is inconsistent with, or

deviates from, the terms and conditions of this consultation. To reinitiate consultation, the BPA must contact the Washington Habitat Branch Office of NOAA Fisheries. If BPA requests reinitiation, the protective coverage of section 7(o)(2) will lapse.

## 2.2 Incidental Take Statement

Section 9 of the ESA and Federal Regulation pursuant to section 4 (d) of the Act prohibit the take of endangered and threatened species without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as spawning, rearing, feeding, and migrating (50 CFR 222.106; 64 FR 60727).

Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and is not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary; and must be implemented by the action agency in order for the exemption in section 7(o)(2) to apply. The BPA has a continuing duty to ensure that the action is implemented in accordance with this incidental take statement. If the BPA fails to comply with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and set forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

### 2.2.1 Amount or Extent of the Take

As stated in Section 2.1.3, above, WDFW believes a few MCR steelhead to use the action area for resting and feeding during migration periods. While the BPA can minimize and even avoid effects on this ESU by timing construction activities for periods of low fish abundance, MCR steelhead can be encountered in the Klickitat River throughout the year. Therefore, incidental take of these listed fish is reasonably certain to occur. Despite the use of the best scientific and commercial data available, NOAA Fisheries cannot estimate a specific amount of incidental take of individual MCR steelhead. In such cases, NOAA Fisheries characterizes the expected level of take as "unquantifiable." However, to ensure that habitat effects and the attendant level of take do not exceed that anticipated in the Opinion, NOAA Fisheries has identified surrogate measures of the amount or extent of take that is authorized in this statement. The proposed action includes measures to reduce the likelihood and amount of incidental take. As mentioned previously, we have restated these measures in the Terms and Conditions below, to ensure the action agency understands they are mandatory.

For water quality effects, take is anticipated for turbidity increases within 100 feet downstream of the project area (for flows up to 10 cfs, the expected level) (WDOE 1997). For streambank stabilization, the extent of anticpated take is that which could result from up to 2,500 feet of stabilization. For worksite isolation and temporary river diversion, the extent of take anticipated is that which could occur from the temporary diversion of up to 120 feet of Snyder Canyon Creek at once, except the area above the low head dam where they may temporarily divert up to 500 feet.

Timing restrictions are designed to allow construction to occur when the majority of migration will be completed and daytime water temperatures in the action area are generally above the preferred temperatures for listed fish. This restriction reduces the likelihood of take of MCR steelhead to near zero. However, the BPA expects to impact a total of 0.6 miles of stream channel, approximately 2,500 feet of streambank, and approximately 1,000 square yards of riparian area. Indirect harm, through long-term habitat modification could occur by the alteration of riparian and instream habitat. Considering the present condition of most of the stream channel and associated streambanks (concrete) and the confined and sparsely vegetated streambanks upstream of the low head dam, it is improbable that the proposed activity will result in anything but a short-term disturbance followed by a long-term beneficial effect for the entire Snyder Canyon Creek subwatershed. Indirect harm could also result if the BPA disregards the conservation measures and reasonable and prudent measures described in this Opinion.

### 2.2.2 Reasonable and Prudent Measures

The following reasonable and prudent measures (RPMs) are non-discretionary. NOAA Fisheries believes that they are necessary and appropriate for minimizing take of threatened MCR steelhead and must be implemented in conjunction with the conservation measures listed in the BA and the T&Cs that follow in order for the exemption in § 7(a)(2) to apply.

1. The BPA will ensure minimization of incidental take from isolation and fish handling activities.

2. The BPA will ensure minimization of incidental take from in-water construction activities by restricting the timing, duration, and extent of construction within the Ordinary High Water Mark (OHWM).

3. The BPA will ensure minimization of incidental take from construction activities in or near the stream by minimizing the risk of effects from erosion and water pollution.

4. The BPA will ensure minimization of incidental take from effects on riparian and instream habitat.

5. The BPA will ensure minimization of incidental take from in-water construction and habitat modification by monitoring and evaluating the effectiveness of construction activities, erosion control measures and planting success rates during and after construction.

### 2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the BPA must ensure that WDFW complies with the following terms and conditions, which implement the RPMs described above. Implementation of the terms and conditions within this Opinion will further reduce the risk of impacts to MCR steelhead. These terms and conditions are non-discretionary.

1. To implement RPM No. 1 (isolation and fish handling) above, the BPA will ensure that:

    a. The probability of encountering listed fishes will be reduced to the maximum extent possible by conducting in-water construction only within the fish work window of June 15 to September 30. Any additional extensions of the in-water work period must be coordinated with NOAA Fisheries and WDFW.

    b. The work area will be well isolated from the flowing stream using the measures described in the BA (e.g., sandbags fill with pea gravel for cofferdams) which are incorporated here by reference.

    c. Any listed fish that may be trapped within the isolated work area will be captured and released using appropriate methods, including supervision by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.

    d. The capture team complies with NOAA Fisheries' electrofishing guidelines (NMFS 2000a).

    e. Captured fish must be released outside the isolated work area as near as possible to the capture area.

    f. All take of listed salmonids during work area isolation must be documented and reported using the format attached in Appendix 1. The BPA will ensure that NOAA Fisheries receive the monitoring reports of take within one month beginning when the initial work area isolation activities commence until in-water construction activities cease. The reports will be sent to NOAA Fisheries, Attention Diane Driscoll, 510 Desmond Drive SE, Suite 103, Lacey, WA 98503. All salmonid carcasses will be collected and delivered to NOAA Fisheries to be identified, at the BPA's expense.

2. To implement RPM No. 2 (construction within the OHWM) above, the BPA will ensure that:

    a. All work within the active channel is completed between June 15 and September 30. Extensions of the in-water work period will first be requested in writing, (including rational for extension) approved by, and coordinated with NOAA Fisheries and WDFW.

b. Planned alteration or disturbance of stream banks or existing riparian vegetation is minimized to the extent described in the BA.

c. Any water diversions or withdrawals done for the purpose of supplying water for construction or for riparian plantings complies with all state and Federal laws, particularly those that require a temporary water right and fish screening of intakes.

d. All vehicles operated within 150 feet of any water body must be inspected daily for leaks and, if necessary, repaired before leaving the staging area. All equipment operated instream must be cleaned to remove all external grease, dirt, and mud before operations below the bankfull elevation. Wash and rinse water will not be discharged into streams and rivers without adequate treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

e. Stationary power equipment operated within 150 feet of any stream or wetland will be protected to prevent leaks.

f. Material removed during excavation will only be placed in a way that prevents it from eroding back into the channel.

3. To implement RPM No. 3 (construction activities adjacent to water bodies), the BPA will ensure that:

a. All temporary erosion and sediment control (TESC) and pollution control measures included in the BA are included as provisions in the contract. Boundaries of clearing limits associated with site access and construction will be clearly marked to minimize disturbance. All sensitive habitat areas to be protected will be clearly marked. During pre-construction meetings, the contractor will be made aware of the types of activities not allowed in sensitive areas. The contractor will be required to have a Spill Prevention Control and Containment Plan (SPCC) and a TESC Plan reviewed by the WDFW and the BPA and in place prior to the start of any construction activities. The TESC plan will outline how and to what specifications various erosion control devices will be installed to meet water quality standards, and will provide a specific inspection protocol and time response. The TESC plan will be included in the project plans and implemented by the Contractor. The plan will address access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and materials storage sites, fueling operations, staging areas, cement, mortars and bonding agents, hazardous materials, spill containment and notification, construction debris, and inspection and replacement of erosion controls. Erosion control measures will be sufficient to ensure that water quality conditions do not negatively impact MCR steelhead.

b. The Contractor develops an adequate, site-specific SPCC and Pollution Control

Plan and is responsible for containment and removal of any toxicants released.

c. Construction within the project vicinity will not begin until all temporary erosion controls (e.g., sediment barriers and containment curtains) are in place. Erosion control structures will be maintained throughout the life of the contract.

d. Boundaries of clearing limits associated with site access and construction will be marked to minimize disturbance of riparian vegetation, wetlands and other sensitive sites.

e. A supply of emergency erosion control materials will be on hand, and temporary erosion controls will be installed and maintained in place until site restoration is complete.

f. Heavy equipment will be limited to that with the least adverse effects on the environment, (e.g., minimally sized vehicles).

g. Vehicle staging, cleaning, maintenance, and overnight storage of vehicles and fuel storage will be in a designated area, 150 feet or more from any stream, water body or wetland.

h. All machinery fueling and maintenance will take place in a designated area 150 feet or more from any stream, waterbody or wetland.

i. All disturbed soil will be replanted with a native seed mix. In addition, young alder bare root stock and willow cuttings will be planted in accordance with the WDFW General Native Riparian and Shrub Steppe Planting Prescription as described in the BA. Erosion control planting will be completed within three days of the end of construction, unless covered or otherwise stabilized with appropriate erosion and sediment control measures.

j. All temporary access roads will be obliterated when the project is completed, the soil stabilized and the site revegetated. Areas compacted during construction activities, will be restored to pre-project infiltration capabilities.

k. Temporary roads in wet or flooded areas must be abandoned and restored by the end of the in-water work period.

l. Boulders, rock, large wood and any other natural construction materials will be obtained outside the riparian buffer area. Material removed during excavation will only be placed in a manner that prevents it from eroding back into the channel.

m. Measures will be taken to prevent construction debris from falling into the river, wetland or riparian area. Any material that falls into a stream or wetland during construction operations will be removed in a way that causes minimum ground

disturbance and maintains water quality.

n. Treated wood debris and treated wood removed as part of a project will be handled and disposed of as appropriate for this type of hazardous material.

o. Any large wood, native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

p. Any water intakes used for the project will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria (NMFS 1995 and 1996a). http://www.nwr.noaa.gov/1hydrop/pumpcrit1.htm

q. Construction discharge water will be: (1) collected and transported to an approved location for treatment, (2) pumped to an upland site at least 300 feet from any waterbody or, (3) to an upland site providing equal or better filtration capacity (as the 300 feet) for appropriate treatment.

4. To implement RPM No. 4 (riparian and wetland habitat protection), the BPA will ensure that:

a. Alteration of native vegetation is minimized. Where native vegetation is altered, measures shall be taken to ensure that roots are left intact. This will reduce erosion while still allowing room to work. No protection is extended to invasive exotic species (e.g., Himalayan blackberry), although no chemical treatment of invasive species will be used.

b. Riparian vegetation removed is replaced with a native seed mix, shrubs, and trees. Trees and willow cuttings are planted along the toe of the stream. The window for tree planting is the dormant period from November 15 to March 30.

c. Alteration or disturbance of stream banks and existing riparian vegetation is minimized by implementing the following procedures: any instream large wood or riparian vegetation moved or altered during construction will stay on site or be replaced with a functional equivalent; all tree removal will be mitigated for onsite by a two-to-one ratio; and any native channel material, topsoil, and vegetation removed will be stockpiled for redistribution in the project area.

d. No surface application of nitrogen fertilizer is used within 50 feet of any water of the State, in the action area.

e. Vehicles and machinery must cross riparian areas and streams at right angles whenever possible.

5. To implement RPM No. 5 (monitoring), The BPA will ensure that:

a. NOAA Fisheries, Washington Habitat Branch, receive in-water construction

monitoring reports as described in T&C 1.f.

b. Pollution and erosion control measures as described above in T&C No. 3a., i.,q., and 4. will be monitored for effectiveness.

c. All significant riparian planting areas are monitored yearly for three years to ensure that finished grade slopes are at stable angles of repose and plantings are surviving satisfactorily (80% survival over three years).

d. If the success standard specified above in 5.c is not achieved, dead plantings will be replaced to bring the site into conformance. If failed plantings are deemed unlikely to succeed, replacement plantings will be conducted at other appropriate locations in the project area.

e. By December 31 of the year following the completion of construction, the BPA will submit a monitoring report with the results of the monitoring required in T&C No. 5.a and 5.b. above. Send the report to NOAA Fisheries, Attention Diane Driscoll, 510 Desmond Drive SE, Suite 103, Lacey, WA 98503.

f. In each of the two years following completion of construction, the BPA will submit to NOAA Fisheries (Washington Branch) a monitoring report with the results of monitoring requirements of 5.c and 5.d above. Send the report to NOAA Fisheries, Attention Diane Driscoll, 510 Desmond Drive SE, Suite 103, Lacey, WA 98503.

## 3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

### 3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2));

- NOAA Fisheries will provide conservation recommendations for any Federal or State activity that may adversely affect EFH (§305(b)(4)(A));

- Federal agencies will within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response will include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. For a response that is inconsistent with the conservation recommendations of

NOAA Fisheries, the Federal agency will explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies regarding any activity that may adversely affect EFH, regardless of its location.

The objective of this EFH consultation is to determine whether the proposed action may adversely affect designated EFH, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse impacts to EFH resulting from the proposed action.

### 3.2 Identification of EFH

Pursuant to the MSA the Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Federally-managed Pacific salmon: chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of the impacts to these species' EFH from the proposed action is based, in part, on this information.

### 3.3 Proposed Actions

The proposed action and action area are detailed above in Sections 1.3 and 1.4 respectively of the Opinion. The action area includes habitats designated as EFH for various life-history stages of chinook salmon.

### 3.4 Effects of Proposed Action

As described in detail in Section 2.1.3 of this Opinion, the proposed activities may result in detrimental short and long-term effects to a variety of habitat parameters. These adverse effects are:

1. Short-term degradation of water quality in the action area because of an increase in turbidity during in-water construction and the potential for contaminants to reach the water.

2. Short-term degradation of habitat because of alteration of streambanks and riparian vegetation.

### 3.5 Conclusion

NOAA Fisheries believes that the proposed action may adversely affect designated EFH for chinook salmon.

### 3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the BPA, it does not believe that these measures are sufficient to fully address the adverse impacts to EFH described above. Consequently, NOAA Fisheries recommends that the BPA implement the following conservation measures to minimize the potential adverse effects to EFH for chinook salmon:

1. Adopt T&C 2.d through 2f, 3.c, through 3.e, 3.g, through 3.m, 3.q, 4.a, 4.d, 4.e, and 5.b as described in Section 2.2.3, to minimize EFH adverse effects No.1 (water quality).

2. Adopt T&C 2.b, 3.d, 3.f, through 3.i, 3.k, 3.l,3.m, 4.a through 4.e and 5.c and 5.d as described in Section 2.2.3, to minimize EFH adverse effects No.2 (riparian habitat).

### 3.7 Statutory Response Requirement

Please note that the MSA and 50 CFR 600.920(j) require the Federal agency to provide a written response to NOAA Fisheries' EFH conservation recommendations within 30 days of its receipt of this letter. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity. In the case of a response that is inconsistent with the EFH Conservation Recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

### 3.8 Supplemental Consultation

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

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## Appendix 1

In-Water Construction Monitoring Report : **Snyder Canyon Creek Fish Passage Improvement**
Start Date: _____
End Date: _____

Waterway: _____
Water Temperature: _____

Construction Activities:
_____
_____
_____
_____
_____

Number of fish observed: _____
Number of salmonid juveniles observed (what kind?):
_____
Number of salmonid adults observed (what kind?):
_____

What were fish observed doing prior to construction?_____
_____
_____

What did the fish do during and after construction? _____
_____
_____
_____

Number of fish stranded as a result of this activity: _____

How long were the fish stranded before they were captured and released to flowing water?
_____
_____
_____

Number of fish that were killed during this activity: _____

***Send report to:***
National Marine Fisheries Service, Attention Diane Driscoll, Washington State Habitat Branch, 510 Desmond Dr. SE, Suite 103, Lacey, WA 98503