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

September 25, 2002

Shannon C. Stewart
Environmental Specialist
U.S. Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson Stevens Fishery Conservation and Management Act Essentional Fish Habitat Consultation for Minor Diversion Screen Installations for the Walla Walla Basin, Walla Walla and Columbia Counties, Washington (KEC-4 or WHB-02-189)

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 the National Marine Fisheries Service's (National Oceanic and Atmospheric Administration [NOAA] Fisheries) Biological Opinion (Opinion) and MSA consultation on construction activities necessary for minor diversion screen installations in the Walla Walla River basin. Construction elements of the subject line project will occur in the Walla Walla River basin, in Walla Walla and Columbia Counties, Washington. The U.S. Department of Energy, Bonneville Power Administration (BPA) determined that the proposed action was likely to adversely affect the Middle Columbia River steelhead (Oncorhynchus mykiss) Evolutionarily Significant Unit (ESU), and requested formal consultation. NOAA Fisheries concurred with this determination, and initiated formal consultation.

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

The NOAA Fisheries concludes that implementation of the proposed project is not likely to jeopardize the continued existence of Middle Columbia River steelhead or result in destruction or adverse modification of their habitat. 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. Specific Reasonable and Prudent Measures of the ESA consultation, and Terms and Conditions identified therein, would address the negative effects resulting from the proposed BPA 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 Extension 227.

Sincerely,

for D. Robert Lohn
Regional Administrator

Enclosure

cc: David Karl, WDFW
Rick Jones, WWCCD

Endangered Species Act - Section 7 Consultation
Biological Opinion

And

Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Minor Diversion Screen Installations for the Walla Walla Basin,
Walla Walla and Columbia Counties, Washington
WHB-02-189/

Agency: Bonneville Power Administration

Consultation Conducted By: National Marine Fisheries Service
Northwest Region

Issued by: for _____ Date: 09/25/2002
D. Robert Lohn
Regional Administrator

TABLE OF CONTENTS

1.0 INTRODUCTION

This document transmits the National Marine Fisheries Service's (National Oceanic and Atmospheric Administration [NOAA] Fisheries) biological opinion (Opinion) and Essential Fish Habitat (EFH) consultation based on our review of a project to install State and Federally approved fish screens in the Walla Walla River basin of southeast Washington state. The Walla Walla River is a tributary to the Columbia River and includes the Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) evolutionary significant unit (ESU). The Walla Walla basin is also essential fish habitat for chinook (*O. tshawytscha*) salmon.

1.1 Background and Consultation History

On April 17, 2002, the NOAA Fisheries received a request from the Bonneville Power Administration (BPA) for formal consultation pursuant to Section 7 of the Endangered Species Act (ESA) for programmatic coverage of activities associated with minor water diversion screen installations. The BPA and the Salmon Recovery Fund Board (SRFB) have funded the proposed project; a cooperative effort between the Walla Walla County Conservation District (WWCCD), Columbia County Conservation District (CCCD), Walla Walla Community College (Irrigation Tech. Program), Washington Department of Ecology (WDOE), Washington Department of Fish and Wildlife (WDFW) and local irrigators. The WDFW has been designated as the non-Federal representative for this project and is responsible for the preparation of the Biological Assessment (BA) and oversight of the project.

The proposed action is the second phase of an ongoing BPA screening effort in the Walla Walla Basin. The first phase included the installation of "bolt on" screens at pump intakes, and was jointly determined by BPA and NOAA Fisheries to be a "no effect" action. Phase II begins a series of activities that include impacts expected to be minor and short-term and result in overall improvements in fish passage and access to quality habitats in the Walla Walla River basin. Based on the information in the BA, BPA has determined that some activities associated with the proposed minor diversion screen installations "may adversely affect" MCR steelhead and their habitat.

The NOAA Fisheries reviewed the following information and engaged in the following steps to reach its determination and prepare this Opinion:

- On April 17, 2002, NOAA Fisheries received a BA and cover letter initiating formal consultation (dated April 12, 2002) from the BPA.

- On May 22, 2002, NOAA Fisheries notified WDFW of deficiencies in the BA. We received additional information by May 28, 2002.

- A site visit with WDFW to see an example of the range of projects described in the BA was conducted on June 13, 2002.

Additionally, we have included several telephone conversations and e-mail correspondence between NOAA Fisheries staff and WDFW in the administrative record.

The objective of this document is to determine whether the proposed project is likely to jeopardize the continued existence of MCR steelhead. The standards for determining jeopardy are described in § 7(a)(2) of the ESA and further defined in 50 C.F.R. 402.14. This document also presents NOAA Fisheries' consultation covering Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

1.2 Description of the Proposed Action

The BPA proposes to fund a cooperative effort between WWCCD, CCCD, Walla Walla Community College (Irrigation Tech. Program), WDOE, WDFW, and local irrigators to install state and Federally approved water diversion screens in the Walla Walla River basin.

The WDFW office administers the Cooperative Compliance Review Program (CCRP) in Walla Walla, Washington. The primary goal of the program is to improve survival of anadromous and resident fish by facilitating properly screened water diversions. This program, comprising a variety of projects, will include the installation of screens for both pump and gravity fed surface water diversions for holders of valid water rights. Some of these projects will require some work or construction around or within the ordinary high water mark (OHWM) of their respective streams. WDFW will construct all Phase II projects in the dry or quasi-dry using cofferdams and/or other means to isolate the work area from flowing water. To ensure the protection of aquatic species, herding or salvage of fish may be required as part of some Phase II projects.

Site-specific conditions will determine the appropriate corrective action for each screen project, with eleven possible actions described in the BA. All Phase II projects will be required to meet the conservation measures and best management practices (BMPs) outlined in the BA and restated in this Opinion. In cases where conservation measures and BMPs cannot be met, additional consultation will be pursued. The following list describes the eleven different types of activities included in this programmatic consultation.

1.2.1 Existing Diversion Projects

1. Repair a stop log system on an existing dam. A log system repair may be necessary to provide water (sufficient head) to an existing replacement fish screen for a diversion. Fish passage will be maintained during all construction activities. The types of repair could range from the replacement of metal uprights for the dam to cutting concrete and/or pouring concrete to do spot repairs on the dam. All work will be done in the dry and precast forms will be used when possible.

2. Repair an existing dam. The need to repair existing dams is similar to No. 1. Fish passage will be maintained during all construction activities. Most repairs will be sectional repairs, cutting concrete and pouring new sections or using precast forms, pouring a new face on the crest of a dam, or repairing an abutment. Heavy equipment will be used from the bank whenever possible, and if necessary to enter the streambed, cofferdams will be used to create a dry work area. Any poured concrete will be dried and cured before contact with any water body.

3. Construct a boulder wing dam. A boulder wing dam will be created to provide pool depth for certain pump screen applications or provide sufficient head to an existing gravity diversion to eliminate the need for annual pushup berms (sugar dikes). An excavator will be used from the bank to create a weir. Weirs will be designed to minimize potential future bank erosion.

4. Construct a temporary gravel/cobble wing dam. The need for a small hand constructed wing dam may be necessary for some gravity intakes. The seasonal dam will not be a full span and will be designed to maintain or improve fish passage. Hand placed cobbles could be used to improve fish passage at some sites. The project will use alluvial rock from dry gravel bars or from an upland source.

5. Construction of an off-channel screen. Replacement of existing, obsolete fish screens with screens that meet current state and Federal standards. To the greatest extent possible, any new screen will remain within the existing screen and bypass structure. Any screens installed downstream from the diversion entrance will be provided with an effective bypass system approved by NOAA Fisheries, designed to collect juvenile fish and safely transport them back to the river with minimum delay. The angle of the screen relative to flow should effectively guide fish to the bypass (NMFS 1995; NMFS 1996; Nordlund 1996). Any work requiring machinery will be done in the dry. Bypasses will be mechanically excavated to within several feet of the stream, with the last several feet excavated by hand or cofferdams constructed to prevent machinery from contacting the stream.

6. Construct an open channel or pipe to an off channel screen with an appropriate fish bypass if needed. Construction procedures will be the same as No. 5. A headgate may be used to control flows into the open channel or pipe for delivery to the screen.

7. Construct an open channel or pipe to an off channel pump sump (vault), without a separate fish bypass. Construction will follow the same procedures as No. 5 and No. 6. The channel and pit will be constructed with a maximum average velocity of less than or equal to 0.2 feet per second during any pumping or river stage condition. Channel and sump area will be required to have water at all times to prevent stranding. A self-cleaning pump screen that meets state and Federal criteria will be required for the intake in the sump.

8. Screens constructed on the bank line with no instream diversion structure. For diversions less than one cubic feet per second the screen will be designed to use the stream's natural sweeping velocity to keep the screen clean. A self-cleaning screen will be used for diversions greater than one cubic foot per second. All construction work will be completed in the dry. No bypass is needed for this type of screen.

9. Constructing a pump pad and intake pipe supports above the OHWM for a pump diversion. Construction will be done above the OHWM in the dry. Construction will follow conservation measure BMPs to minimize disturbances to the stream bank.

10. Constructing an open channel or pipe for a fish bypass. Armoring used to protect an open channel or a pipe bypass will be limited to a maximum of five cubic yards of riprap at the mouth of the channel. Riprap will be filled with soil and planted with native vegetation. Construction guidelines will be the same as No. 5.

11. Constructing a scour structure (barb, vane, large woody debris (LWD) complex) to maintain depth for a pump screen. Equipment used to place instream structures will be operated from the bank. Scour structures will be designed using the Integrated Streambank Protection Guidelines (ISPG) (WDFW and Inter-Fluve 2002). Work will be done during the summer low-flow work window of July 15 to Sept. 30.

The objective of this project is to install state and Federally approved fish screens for water diversions in the Walla Walla basin. Fish screens that meet state guidelines are designed based on worst-case conditions fish might encounter, to ensure that fish at the most vulnerable life history stage and the most severe environmental conditions are free to move safely around the facility. The goal is total exclusion screening, which will transport fish around diversions without unnatural injury, stress, delay, or disorientation.

1.2.2 Construction Activities

Each of the proposed actions is likely to involve one or more of the following construction activities:

1. Onsite activities before site alteration - surveying, minor vegetation clearing, placement of stakes and flagging guides, monic movements of machines and personnel over action area.

2. Establishment of construction staging area - when actions require heavy equipment, that equipment must be delivered to the site, fueled, maintained and stored in temporary facilities when not in use.

3. Materials storage - soil rocks or other materials that must be hauled to, and stored at, the action site.

4. Site preparation - removal of surface vegetation and major root systems that may be disposed of by natural decomposition or burning, or reserved for use in restoration activities. Construction can also involve the discharge of water for actions such as concrete washout and pumping for work area isolation.

5. Earthwork - use of heavy machinery to move natural soils from one location to another by excavating, filling, and usually, compacting.

6. Site restoration and cleanup - protection of bare earth by seeding, planting, mulching and fertilizing.

1.2.3 Conservation BMPs

Conservation measure BMPs are designed to minimize any negative impacts associated with implementing the proposed project. These actions will be incorporated "as necessary" based on the specific needs of each individual action. The conservation BMPs are as follows:

1. The work window for all Phase II activities will be July 15 through September 30. All screen projects in the CCRP are prioritized by stream reach so that those occurring in salmonid spawning and rearing habitats are done at an appropriate time of the year. Projects will be done during an optimum time (during the work window) to reduce the potential impact on all listed fish species.

2. All fish screen facilities will be consistent with NOAA Fisheries *Juvenile Fish Screen Criteria* (NMFS 1996), and all intake screening projects will be consistent with NOAA Fisheries *Pump Intake Screen Guidelines* (NMFS 1996).

3. Work will take place in the dry or quasi-dry. The work area will be isolated from the stream flow by temporarily diverting the flow from the work area or bypassing the work area altogether. Flow will be diverted using structures such as cofferdams (sandbags containing pea-gravel, ecology blocks) or aqua barriers

    a. Sandbags will be filled with washed material, 3.0 millimeters or greater in diameter, or will be composed of impermeable material and sufficiently sealed so as to prevent the delivery of fine sediments (less than 3.0 millimeters) into the affected watercourse. All sandbags will be removed from the affected waterway and disposed or stored above the OHWM of the affected stream. The sandbags will be removed at the earliest possible opportunity once ambient stream flow conditions recover. In any case, sandbags will be removed prior to November 1. In the event that the installation of sandbags has the

potential to strand fish near channel margins, fish capture and rescue procedures will be conducted in accordance with conservation BMP five to the extent that the provisions therein apply.

b. For instream work where fish are present, they will be removed before the start of construction (see Conservation BMP No. 5) and efforts must be taken to minimize effects on fish adjacent to the work area. Temporary bypasses will be sized large enough to accommodate the predicted peak flow rate during construction. Dissipation of flow at the outfall bypass system (e.g., splash protection, sediment traps) will be required to diffuse the erosive energy of the flow. Water quality below the bypass outfall will meet established standards to reduce effects on habitat and associated fish downstream of the bypass. Water removed from the de-watered work area will be pumped to upland areas and treated as necessary to ensure that it will meet Washington State water quality standards prior to reentering any wetland, stream, or any other waterbody. To ensure that the work area is not exposed to flowing water (i.e., due to unexpected rain during work period), bypass requirements apply to seasonally dry streams and streams with perennial flow.

c. The following are general approaches that will be carried out at temporary stream bypass systems:

(1) Piping to convey the streamflow around the project area.

(2) A temporary channel to carry streamflow during construction.

(3) Pumping of stream water downstream of the fish exclusion reach. Bypass pumping will occur only in the stream reach isolated by upstream and downstream block nets, but not from within the work area.

(4) Combination of approaches to create a practical bypass system: for example, pump the stream flow downstream during work hours and pipe it through the work area during off-hours.

4. Erosion and sediment control (ESC) measures will be designed and implemented before there is any opportunity for storm runoff to create erosion. Project designs will emphasize erosion control rather than sediment control. The following are summaries of the principles and specific measures to be used during any construction projects where erosion and sediment problems could arise:

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

b. A pollution and erosion control plan will be prepared and carried out. 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.

c. 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.

d. If rain falls during construction, and ESC measures are not adequate to maintain water quality downstream of the site, then all construction activities, except for those necessary to stabilize the site, will stop until the storm ceases and downstream water quality has returned to pre-storm conditions. The ESC measures must be re-designed to address the deficiencies, and installed prior to re-starting construction.

e. All activities will be limited to a maximum 20 linear feet of disturbed streambank area, with the exception of on-bank screens for diversions greater than 1.0 cubic feet per second (cfs) (see Section 1.2.1 No. 8). For diversions greater than 1.0 cfs, the area of disturbed streambank will be the minimum necessary for screen installation.

f. To minimize the duration of area exposed, projects will be completed as quickly as possible without compromising the quality of work and disturbed areas will be stabilized within three days of the end of construction.

g. Temporary and permanent cover measures will be provided to protect disturbed areas (e.g. erosion control blankets, plastic covering, mulching, seeding or sodding. Temporary cover will be installed if any cleared or graded area is to remain un-worked for more than seven days from June 1 to Sept 30; and for more than two days from Oct 1 to May 31. Temporary cover will be completed within 12 hours of cessation of work in areas that will remain un-worked for the specified time period. As long as the covering remains in place, planting or seeding is not required in covered areas until conditions are appropriate for growth.

h. Boulders, rock, and any other natural construction materials will be obtained outside the riparian buffer area.

i. Any large wood[1], native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration

j. All disturbed areas will be re-planted with native vegetation within three days of the end of construction, unless covered or otherwise stabilized with appropriate erosion and sediment control measures. Planting will be completed no later than March 1 of the year following construction.

k. Sandbags or an equivalent barrier will be constructed between the project area and the surface water in order to isolate the construction area from high water that might result due to precipitation (see Conservation BMP No. 3.1 for sandbag requirements and Conservation BMP No. 3.3 for temporary bypass requirements).

l. To reduce the amount of sediment transported beyond the disturbed areas of the construction site, appropriate perimeter protection measures (vegetated strips, silt fences) will be installed and maintained prior to the start of construction. Undisturbed vegetated buffer zones will be retained along stream channels to reduce sedimentation rates, channel instability, and protect aquatic habitat improvements.

m. Preventative measures to minimize wind transport of soil (i.e. water spraying) will be taken when sediment is likely to be deposited in water. The amount of water sprayed will be the minimum necessary to prevent airborne dust and sediment.

n. The site will be monitored for turbidity and all ESC measures will be maintained until construction is complete and site conditions stabilize. During construction, turbidity will be visually monitored for turbidity on a daily basis. If a sediment plume is observed or streamflow below the site becomes "cloudy", work will be stopped and actions taken to reduce and/or eliminate the source of turbid discharge.

o. Barriers will be installed to prevent surface runoff from entering the construction area. To remove particulate matter, water pumped from the construction area will be treated prior to reintroduction to a storm drainage system, stream, wetland, or other waterbody. Water discharged from the site will not cause erosion at or near the outfall location and will be treated using the best available technology applicable to site conditions. The treatment must remove debris, nutirients sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

---

[1]For purposes of this Opinion only, "large wood" means a tree, log, or rootwad large enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occur. See, ODF and ODFW 1995.

5. To ensure the protection of aquatic species, herding or salvage of fish may be required as part of some Phase II projects. To reduce the potential for harm, the handling of fish would be limited to the extent possible. The WDFW District Fish Manager will be consulted before any herding or salvage activity and the applicant will be required to follow conservation BMPs described 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. To reduce the likelihood of steelhead in the project areas, WDFW will monitor all projects through the Washington State Hydraulics code. Project timing will be done primarily during the work window from July 15 to September 30. However, project timing will be adjusted in specific cases to minimize impact on fish at vulnerable life history stages. Any fish in the work area will be documented (Appendix I) and removed according to the following methods (developed from RRMTWG, 2000) :

   a. 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 (9.5 millimeters stretched). Block nets are installed securely along both banks and in 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 maintenance 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, and/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.

   b. 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 9.5 millimeters 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:

      (1) 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.

c. Electrofishing is employed when other methods prove ineffective. Use of electrofishing may be determined through permit requirements and/or site conditions. It may not be recommended in all situations. The following guidelines are recommended for all electrofishing sessions (NMFS 2000b):

(1) No electrofishing in anadromous fish-bearing waters from October 15 to March 1. No electrofishing in resident waters from November 1 to May 15. In order 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. Electrofishing will only be conducted at other times of the year in response to emergency activities. Electrofishing at other times of the year may require mitigation. Specific mitigation requirements recommended by the NOAA Fisheries, (United States Fish and Wildlife Service (USFWS), and WDFW will be followed.

(2) Equipment must be in good working condition and operators should go through the manufacturer's preseason checks, adhere to all provisions, and record major maintenance work in a logbook.

(a) Measure conductivity and set voltage as follows:

Conductivity (mmhos/cm)	Voltage
- Less than 100	900 to 1100
- 100 to 300	500 to 800
- Greater than 300	to 400

(b) Only Direct Current (DC) or Pulsed Direct Current (PDC) should be used.

(c) Each session should begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500 milliseconds and do not exceed five milliseconds. Pulse rate should start at 30 Hz and work carefully upwards. In general, exceeding 40 Hz will injure more fish.

(d) Fish should not come in contact with the anode. The zone of potential fish injury is 0.5 meters from the anode. Care should be taken in shallow waters, undercut banks, near structures such as wood, or where fish can be

concentrated in high numbers because in such areas the fish are more likely to come into close contact with the anode.

(e) Electrofishing should be performed in a manner that minimizes harm to fish. The stream segment should be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period of time. Remove fish from the electrical field immediately; do not hold fish in net while continuing to net additional fish.

(f) Crew members should carefully observe the condition of the excluded fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Each fish should be completely revived before releasing upstream of the block nets. ESA specimens will be released as soon as possible upstream of the block nets in an area that provides refuge.

(g) 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 prey-sized 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.

d. The affected reach will be dewatered slowly while using dipnets to remove aquatic vertebrates from pools where they may congregate. These pools are frequently located at culvert inlet and outlets. Special attention should be placed at culvert outfalls where fish sheltering in pipes will exit. Pumps, which are used to temporarily bypass water around work sites, should have their intakes fitted with a smaller mesh screen or put in a slotted bucket to prevent aquatic life from entering the pump hose. The screen or bucket will be installed, as a precautionary measure, to prevent any aquatic vertebrates that may have been missed in the exclusion process. The screen or bucket will also prevent fish and other wildlife from entering the pump if a block net should fail.

e. Aquatic vertebrates will be released to a location upstream of the activity and block net. They should be released into an area that provides equivalent or better habitat than the location from which they were removed. Aquatic vertebrates may be released downstream of the block nets only if this placement provides better protection and there is no other practical alternative. If the isolated stream reach is large and many fish are expected, several buckets should be available with clean stream water to hold the fish

until counting and measuring can be completed. These buckets should be equipped with air pumps to maintain proper dissolved oxygen levels. Frequent monitoring of bucket temperature and well being of the specimens should be done to assure that all specimens will be released unharmed. Perforated buckets may also be used and placed upstream of the block nets until the fish are counted.

f. Block nets should be removed, following completion of the activity, as soon as the work area is stabilized. Block nets should not be left in place for an extended amount of time. Block nets should be removed with care and checked for aquatic vertebrates.

g. A trained fish biologist or WDFW fish biologist will use dip nets, seine nets, or minnow traps to capture fish in the dewatered area. This handling has been shown to increase plasma levels of cortisol and glucose in fish (Hemre and Krogdahl 1996; Frisch and Anderson 2000). Considering the expected low flow in mid-July and the accessibility of the dewatered area, it is unlikely that electrofishing will be necessary. Electrofishing may result in direct mortality of young-of-the-year or juvenile steelhead. Physical injuries from electrofishing include internal hemorrhaging, spinal misalignment, or fractured vertebrae. The likelihood of injury or mortality will be reduced by using a qualified WDFW biologist that ensures safe capture, handling, and release of fish.

6. BPA, WDFW and individuals authorized to work under this consultation will ensure that these conditions are strictly adhered to: any non-compliance with these terms and conditions or 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).

7. Wherever heavy equipment or power equipment will be used, the following measures will be taken to minimize effects on the landscape, associated habitat and species in the area.

   a. The contractor will be required to have a Spill Prevention Control and Containment Plan (SPCCP). The SPCCP will take measures to reduce the impacts from potential spills (fuel, hydraulic fluid, etc). These measures will be in place prior to the start of any construction action.

   b. Equipment must be stored, serviced, and fueled away from aquatic habitats or other sensitive areas. Equipment staging or refueling areas must be located at least 150 feet from the edge of wetlands and streams, in areas where environmental effects from accidental spills or leakage will be minimized. Heavy equipment will be cleaned (e.g., power washed, steamed, etc.) prior to use below the OHWM. All equipment will be free of petroleum based or other hazardous fluids, noxious weeds, and/or debris before entering the stream channel. Equipment will be inspected daily for leaks or accumulations of oil or grease and any identified problems will be fixed before entering areas that drain directly (without any stormwater treatment) to streams or wetlands.

c. Uncured concrete will not come into contact with the waterbody. Washout of concrete trucks and equipment is prohibited within 250 feet landward of the edge of any stream, lake or wetland, unless dedicated washout facilities designed to treat the wash water are used. Wash water will not enter into any waterbody prior to appropriate treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

d. Existing paths and roadways will be used for access to project sites where feasible. Drainage improvements should be constructed and stabilized before the rainy season. Fill material used on project sites must be from non-streambed and non-wetland sources that are free of fines. Do not sidecast excavated road materials, and avoid accumulating or spreading these materials in upland draws, depressions, intermittent streams, and springs. Efforts will be made to restore the original hydrology of the site.

e. Any temporary roads will be obliterated when the project is completed, the soil will be stabilized and the site will be revegetated. Temporary roads in wet or flooded areas must be abandoned and restored by the end of the in-water work period.

f. Equipment ingress/egress points will be designed to minimize impacts and, in most cases, equipment should be stationed at the top of the streambank, rather than in the stream, during excavation or placement of materials.

g. No temporary stream crossing may be built at known or suspected spawning areas, or within 300 feet upstream of such areas if spawning may be affected.

h. Stream crossings by heavy equipment will be avoided or minimized to the maximum practicable extent. If stream crossings are unavoidable, vehicles and machinery must cross riparian areas and streams at right angles whenever possible. Where possible, the equipment operator will use temporary pads, such as boulders, logs or pads to cross the stream at right angles to the main channel. Cable systems will be used, where appropriate, to eliminate or reduce the need for ground-based equipment.

8. Streambank protection will be designed to provide the greatest degree of natural stream and floodplain function possible. Streambank protection treatments will be selected from options identified using screening matrices described in the Integrated Streambank Protection Guidelines (http://www.wa.gov/wdfw/hab/ahg/ispgdoc.htm) (WDFW et al. 2002.

9. Site inspections will be performed by a qualified biologist within one year after project completion to assure that the project is functioning as planned and that there are no unintended consequences to fish, wildlife or plant species and their habitat (see also Section 2.2.3 No. 5.b and c). Any necessary corrective measures must be evaluated with respect to

their urgency and potential effects on listed species. Corrective measures requiring in-stream work or other work likely to cause erosion will be implemented during the following work window pending written notification and approval by NOAA Fisheries.

10. No later than March 1 of the year following construction, native vegetation will be seeded or re-planted in all areas disturbed during construction.

11. All regulatory permits and official project authorizations (e.g., National Environmental Policy, National Historic Preservation Act, Level I Contaminants Survey, WDFW's Hydraulic Project Approvals and permits from the Army Corps of Engineers, etc.) must be secured before project implementation. All terms and conditions in these regulatory permits and other official project authorizations must be followed to eliminate or reduce adverse impacts to any endangered, threatened, or sensitive species or their habitats.

12. Modifications to an approved work plan and the supporting rational must be submitted in writing, reviewed and approved by BPA, NOAA Fisheries, the project biologist and the cooperators and/or landowner(s) before the work can be carried out or continued. This will include changes requiring modifications of permits, or alterations to the scope, design, or intent of the project.

13. Excavation or transport equipment/machinery will be limited in capacity, but sufficiently sized to complete required restoration activities.

1.3 Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 C.F.R. §402.02). The screen projects associated with this program are located throughout the Walla Walla River basin including the Upper and Lower Touchet River, Lower Walla Walla River, and Mill Creek watersheds. Streams have been prioritized by WDFW according to the life history stages of ESA listed fish present. First priority streams provide both spawning and rearing habitat, second priority streams provide rearing and migration habitat and third priority streams are those that have been determined to have an insignificant or inconclusive value for ESA listed species. Individual sites vary from isolated rural agricultural locations to downtown Walla Walla.

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 NOAA Fisheries, (64 Fed. Reg. 14517, March 25, 1999).

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.

2.1.1.1 Middle Columbia River Steelhead

Middle Columbia River steelhead were listed as threatened under the ESA on March 25, 1999 (64 Fed. Reg. 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.

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 (61 Fed. Reg. 41542; August 9, 1996). Bjornn and Reiser (1991) noted that steelhead eggs incubate about 85 days at 4 degrees Celsius and 26 days at 12 degrees Celsius to reach 50 percent hatch. 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. There are several factors for 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 percent of estimated historical levels. Dam counts of summer steelhead on the Walla Walla River at Nursery Bridge Dam declined 17 percent per year from 1993 to 1998, with a five-year geometric mean abundance of just over 300 fish (Greer 1998, cited in Busby et al. 1999).

Currently steelhead are the only anadromous salmonids known to spawn in the Walla Walla River system (Columbia River Inter-Tribal Fish Commission 2001). Steelhead are found in the Walla Walla River including the North and South Forks and several of their tributaries, Mill Creek and several of its tributaries, Dry Creek, and the Touchet River including the North and South Forks, Wolf Fork, Robinson Fork, Spangler Creek, Lewis Creek, Jim Creek, Patit Creek, and Coppei Creek (Kuttel 2001).

Steelhead begin entering the Walla Walla system as early as September or October but, if necessary, they will delay upstream migration until stream conditions become favorable (Bjornn and Reiser 1991). Peak adult migration occurs in early November but migration timing may vary from year to year depending on weather or flow conditions. Most of the spawning in the Walla Walla River system occurs near the headwaters where riparian vegetation, water temperatures, and gravel are more suitable.

There is no direct commercial fishery on this stock although incidental catch of wild steelhead occurs in the Columbia River. Moreover, the Cayuse, Walla Walla, and Umatillas, known collectively as the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), harvest this stock at unknown numbers.

2.1.1.2 Population Trends and Risks

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 percent 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 percent declines per year. The greatest declines in abundance

over the past 10 years have occurred on the mainstem of the John Day river (21 percent) and on the Deschutes River at Sherrars Falls (12 percent decline per year) (Busby et al. 1999; Table 7).

Results of decline analysis for the MCR steelhead ESU overall indicates 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 percent decline in 48 years ranges from 0 percent for the Yakima River stock to12 percent 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 percent decline in 48 years ranges from 0 percent for the Yakima River stock to 32 percent 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.

2.1.2 Evaluating the Proposed Action

The standards for determining jeopardy are set forth in §7(a)(2) of the ESA as defined by 50 C.F.R. Part 402. The NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify habitat. This analysis involves the initial steps of (1) defining the biological requirements of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributed to: (1) collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. Generally, NOAA Fisheries evaluates whether the action, directly or indirectly, will modify the listed species' habitat to the extent that such habitat modification will effect the species to the extent that it will appreciably reduce the likelihood of both survival and recovery of the listed species in the wild. If NOAA Fisheries concludes that the action will jeopardize the species, it must identify any reasonable and prudent alternatives available.

2.1.2.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA §7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. The 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, 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 are relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to naturally reproducing population levels at which time, protection under the ESA will be unnecessary. Species or ESUs not requiring ESA protection have the following attributes: population sizes large enough to maintain genetic diversity and heterogeneity, the ability to adapt to and survive environmental variation, and are self-sustaining in the natural environment.

These requirements include food, flowing water (quantity), high quality water (cool, free of pollutants, high dissolved oxygen concentrations, low sediment content), clean spawning substrate, and unimpeded migratory access to and from spawning and rearing areas (adapted from Spence et al. 1996).

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 1996). These pathways (water quality, habitat access, habitat elements, channel condition and dynamics, flow/hydrology, watershed conditions, disturbance history, and riparian reserves) indirectly measure the baseline biological health of listed salmonid 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 include temperature, sediment, and chemical contamination) that are measured or described directly (see: NMFS 1996). Based on the measurement or description, each indicator in the MPI can be classified within a category according to the 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."

The specific biological requirement to be affected by the proposed action is habitat access, including migratory access. Because of the severely degraded condition of the watershed, minor improvements in pool quality (rock weirs or instream structures), instream flows (increased efficiency) and disturbance history (elimination of seasonal sugar-dikes) may occur but are secondary effects and unlikely to be measurable.

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 §7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process" (50 C.F.R 402.02). The term "action area" is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."

The proposed project is located in the Walla Walla River subbasin in Walla Walla and Columbia Counties, Washington. The Walla Walla River basin is located in southeast Washington, and is bounded by the Columbia River to the west, Eureka Flat to the north, the Blue Mountains to the east and the Horse Heaven Hills to the southwest. The watershed drains an area of approximately 1,758 square miles, 73 percent of which is located within Washington state. Elevations in the subbasin vary from 300 feet near the mouth of the Walla Walla River to 6,000 feet in the Blue Mountains.

Historically, the lowlands of the Walla Walla subbasin were dominated by shrubs, herbaceous plants, and grasses. Shaped by glacial activity the subbasin contains large quantities of gravel and fine sediment. Two aquifers are present in the watershed. A deep aquifer comprised of basalt layers hundreds of feet in thickness underlays the entire watershed. This aquifer contains a substantial amount of ground water (4 million acre-feet) flowing slowly through fractures in the rock. The aquifer is recharged by precipitation in the Blue Mountains. Approximately 2.6 million acre-feet are accessible for use from this aquifer. About 22,500 acre-feet are pumped to the surface each year. A gravel aquifer about 120,000 acres in size overlies the basalt aquifer from Milton-Freewater downstream to the town of Touchet (Kuttel 2001). Water levels in both aquifers appear to be declining. The gravel aquifer has substantial hydraulic continuity with the Walla Walla River (Kuttel 2001), which flows subsurface for two and one-half to five miles (depending on weather conditions) between the city of Milton-Freewater and the Washington-Oregon border during the summer months. This is partially caused by water loss to the gravel aquifer, but also a result of irrigation withdrawals upstream. Surface water from numerous streams in the Washington portion of the basin is over appropriated. These streams have been closed to further consumptive appropriations since 1977 (Kuttel 2001).

Agricultural lands comprise 58 percent of the watershed, while forest land and range land cover 25 percent and 17 percent respectively (Kuttel 2001). Agricultural activities have seriously degraded salmonid habitat in many areas of the watershed. Practices such as farming to the edge of streams, removing riparian vegetation, filling off-channel areas, diking and channelization, allowing livestock full access to streams, conversion of native perennial vegetation to annual crops, and irrigation have all played roles in habitat degradation (Mendel et al. 1999; Saul et al.

2000). Water diversions and withdrawals appear to be a major limiting factor throughout the subbasin causing low stream flows and fish kills (Karl 2002) In several areas irrigation water management practices reduce streamflow to a trickle or eliminate it all together. The WDFW estimates that less than 10 percent of surface water diversions in the Washington portion of the basin meet state or Federal juvenile fish screening criteria. About 80 percent or more of diversions are screened, but in most cases the sole purpose of screens is to keep debris out of the irrigation system. Very few if any screens are designed specifically to prevent juvenile salmonids from entering the irrigation system. Roughly 80 percent of gravity diversions identified in the CCRP are unscreened, with the exception of major gravity diversions that are screened to meet old criteria, but often do not meet current state or Federal juvenile fish screen criteria. Over 75 percent of the diversions identified in the CCRP are located in streams utilized for salmonid spawning, rearing and migration. The high incidence of non-compliant surface water diversions is a serious threat to Federally listed juvenile salmonids. It is likely that the diversions identified in the CCRP may represent only 50 to 60 percent of surface water diversions currently in use in the Washington portion of the basin. The majority of diversions (85 percent) are pumps. A high proportion of unidentified diversions are believed to be present in residential areas of the cities of College Place and Walla Walla. It is likely that a significant portion of these diversions may be unpermitted illegal water withdrawals with no water rights (Kuttel 2001). This Opinion is only applicable to permitted legal water withdrawls (see also section 2.2.3 No. 1.c).

Poor riparian zone condition and stream flows reduced by irrigation combine with high summer air temperatures to raise water temperatures above the tolerance level of salmonids during the summer months (Mendel et al. 1999; Mendel et al. 2000). Dryland agricultural fields managed with conventional tillage and summer fallow practices yield unusually high amounts of sediment to streams via sheet and rill erosion during the winter months. Forest management has made significant contributions to habitat degradation as well (Kuttel 2001). The impacts of urban areas such as the cities of Walla Walla, College Place, and Milton-Freewater are not well documented. Impervious surfaces (buildings, parking lots and roads) likely discharge contaminated runoff to streams and alter hydrologic patterns. Floodplain development, channelization of streams, and municipal water use are important habitat altering processes as well. Urban areas are a small portion of the subbasin when compared to agricultural land, but their impacts are considerable.

Using the MPI (NMFS 1996), the BPA evaluated the environmental baseline conditions of the Walla Walla subbasin. All variables were considered "not properly functioning" with the exception of road density/location and increase in drainage network which are considered "at risk." Therefore, based on the best available information, NOAA Fisheries concludes that none of the biological requirements for MCR steelhead are functioning properly at the subbasin level. The status of the species is such that there must be substantial improvement in environmental conditions to meet the requirements for long term survival and recovery of the species. Further

degradation of these conditions could affect the likelihood of survival and recovery and increase the risk they face under the environmental baseline.

2.1.2.3 Factors Affecting Species Environment within Action Area

The action area is surrounded by agricultural land. This has been the case throughout the Lower Walla Walla subbasin since the early 1800's. Generally, baseline conditions in the Walla Walla subbasin are degraded and in the action area, none of the habitat indicators are properly functioning. The three most limiting factors are water quantity, water quality, and habitat conditions (Mendel et al. 1998, Mendel et al. 1999, Mendel et al. 2000).

Legal and illegal water withdrawals for irrigation have significantly reduced water quantity in the river and its tributaries. Prior to the summer of 2000, two diversion dams in Milton-Freewater, Oregon removed all the flow from the mainstem Walla Walla River for a period of roughly June 1 through September 30. This left the "Tumalum Branch" dewatered for a distance of two and one-half to five miles. The CTUIR and Oregon Department of Fish and Wildlife (ODFW) have conducted several fish rescue operations as flows begin to diminish in this reach. The year 2000 rescue efforts (a cooperative effort of CTUIR, ODFW, and Walla Walla River Irrigators) recovered an estimated 3,500 juvenile rainbow trout/steelhead and 15 bull trout juveniles from this stretch. Juvenile rainbow/steelhead rescued in April through June are suspected to be outmigrating smolts and are released below the dewatered reach, while juvenile rainbow/steelhead captured later in the year are assumed to be rearing. The rearing fish are released above the dewatered reach where flow conditions are more favorable (Kuttel 2001). In the spring of 2000 the USFWS reached an agreement with Hudson's Bay Improvement District and Walla Walla River Irrigation District (both located in Milton-Freewater, Oregon) to ensure a minimum instream flow of 18 cubic feet per second during 2001 and 25 cubic feet per second during 2002 flowing over the Nursery Street Bridge Diversion Dam in Milton-Freewater, Oregon. Gardena Farms Irrigation District (located in Washington) was also part of the agreement, agreeing to minimum instream flows of 14 cubic feet per second during 2001 and 18 cubic feet per second during 2002 or such higher flows that will provide fish passage through the Burlingame fish ladder. (located southwest of Walla Walla, Washington). The bypass flows left by irrigators in 2001 under the above agreement resulted in year-round flows in the channel at the state line.

Most watershed reports for the subbasin describe high seasonal water temperatures, with nine segment on Washington State's 303(d) Clean Water Act list (2000). Naturally low summer stream flows, exacerbated by irrigation withdrawals and loss of riparian cover have resulted in maximum temperatures often exceeding 24 degrees Celsius (75 degrees Fahrenheit) for extended periods during the months of June through September (Kuttel 2001). Extensive downcutting has left stream banks in the action area steep and unstable, supporting only isolated, narrow strips of riparian vegetation. Streambank conditions and floodplain connectivity in the action area are degraded by bank armoring, levees, channelization, and other flood control

measures. Agricultural practices have reduced riparian buffers. Buffer widths are narrow and vegetation is mostly immature. Presently there are 707 acres enrolled in the Conservation Reserve Enhancement Program (CREP) in Walla Walla County. The abundance of LWD is extremely low and recruitment of LWD is poor. Roads, urban and rural development, and agricultural land uses have altered channel dynamics and hydrology in the basin (Mendel et al. 1998; Mendel et al. 1999; Mendel et al. 2000).

2.1.3 Effects Of the Proposed Action

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

Construction related impacts from these projects is dependent on the size and scope of the project and the equipment used. Equipment used to accomplish the tasks might range from shovels and rakes to trackhoes and bulldozers. Work methods also include isolating the work from flowing waters to allow work to take place in the dry. Placement of sandbags requires only the delivery of materials and placement of bags on the streambed. Site preparation work may include fish exclusion and capture protocol as described in the conservation measure BMPs section of this Opinion.

Installation methods for the eleven types of screen projects are proscribed by the 13 non-discretionary conservation measure BMPs. These conservation measures, as they apply, will be required elements of each proposed project. The conservation BMPs control the way the work is accomplished at the individual project sites and serve to minimize the impacts of the work on listed species and their habitat. Because these conservation BMPs will be required elements of the project they help inform the overall effects analysis of the projects. The condition "as they apply" recognizes that the full suite of 13 conservation BMPs might not be necessary to minimize effects in every case. Conversely, necessary conservation BMPs are defined by specific situations in the BA and will be followed as stated.

Potential negative effects associated with Phase II activities include temporary increases in sedimentation in proximity to projects requiring work within the OHWM and the temporary loss or disturbance of riparian vegetation. Instream construction activities, disturbance of the stream banks and/or stream bed through excavation and the placement of structures in the stream can mobilize existing sediments and temporarily increase turbidity levels. Clearing of vegetation for access and staging areas can reduce the amount of stream shade and allochthonous inputs.

Expected positive effects include: reduction/elimination of impingement or entrainment of juvenile salmon on screens, safe passage around a facility or through the bypass system, and

elimination of annual stream disturbance by irrigators constructing push-up berms. The goal of this project is total exclusion screening, which will transport fish at the most vulnerable life history stage and the most severe environmental conditions, around diversions without unnatural injury, stress, delay or disorientation.

2.1.3.1 Direct Effects

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

Juvenile and adult steelhead may inhabit the action area during the proposed construction periods. Generally, the direct effects are related to the extent and duration of construction activities in or adjacent to the streams. Any negative habitat effects associated with the proposed project are likely to be short in duration and will be minimized through restrictions in timing of construction and use of conservation measure BMPs. Negative effects associated with capture and removal of fish from in-water work areas will be more than offset by the reduced entrainment resulting from appropriate screen installations.

2.1.3.1.1 Fish Handling

If fish removal is necessary, the work area will be isolated with block nets and a trained fish biologist will use seines and dip nets to capture and/or move fish. This handling has been shown to increase plasma levels of cortisol and glucose in fish (Hemre and Krogdahl 1996, Frisch and Anderson 2000). Subsequently, electrofishing may be conducted. Electrofishing can result in direct mortality of young-of-the-year or juvenile steelhead. Physical injuries from electrofishing include internal hemorrhaging, spinal misalignment, or fractured vertebrae. Although the practice is potentially injurious or lethal to some fish, but for electroshocking, all fish stranded within the work areas will otherwise die. The likelihood of injury or mortality will be minimized by using a qualified biologist to ensure the safe capture, handling, and release of fish.

2.1.3.1.2 Water Quality

The expected negative effects associated with grading, excavation, the installation of dewatering barriers, screens, and the back-filling and removal of materials in the construction area include temporary increases in turbidity and sediment levels during construction. Short term negative effects include: deposition of fine sediment that can significantly degrade instream spawning habitat and reduce survival of steelhead from egg to emergence (Phillips et al. 1975), sublethal effects from suspended sediments (e.g., elevated blood sugars and cough rates (Servizi and Martens 1992), physiological stress and reduced growth, loss of intergravel cover for fish from increased sediment levels (Spence et al. 1996), avoidance of suspended sediments by juvenile

salmonids (Bisson and Bilby 1982; Servizi and Martens 1992), and elevated turbidity levels that can reduce the ability of salmonids to detect prey and can cause gill damage (Lloyd *et al*. 1987). Moderate turbidity levels (11 to 49 NTU's) also may cause juvenile steelhead and coho 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).

These negative effects will be minimized through recommended restrictions in timing of construction and the use of erosion control measures identified in the conservation BMPs section of this Opinion. It is expected that the water temperature in most of the action area during the work window is sufficiently high that most salmonids will have already moved upstream to cooler locations. Additionally, aquatic species present during construction will seek refugia or will avoid areas of high turbidity. Overall, the temporary increase in turbidity will not be expected to influence the environmental baseline over the long term.

2.1.3.1.3 Streambed Disturbance

Excavation, removal of the existing bypass structure, placement of dewatering barriers, in channel work, and removal of construction materials, will disturb the substrate of the effected waterbody. Timing restrictions make it highly unlikely that the instream work will affect spawning or incubation periods although instream work may disturb habitat by homogenizing the substrate and reducing the diversity of benthic habitat in the river bed. Additionally, the use of heavy equipment in riparian areas and within the streambed may cause soil compaction resulting in reduced infiltration at the project site. Such compaction decreases the stability of the banks, reduces recruitment of riparian vegetation, which results in increased deposition of fine sediments into the river. The conservation BMPs outlined previously are designed to minimize the disturbance of riverbed. One of the objectives of this project is to eliminate the annual streambed disturbance presently caused by the actions of irrigators. Therefore, the long term consequence of this project will be a reduction in streambed disturbance.

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. Indirect effects may occur outside of the area directly affected by the action. Indirect effects might include other Federal actions that have not undergone §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 Removal of Riparian Vegetation

The disturbance or removal of riparian vegetation reduces the potential contribution of the individual sites to functional riparian habitat. Most of the Walla Walla subbasin exhibits poor

riparian conditions (Kuttel 2001). The removal of existing vegetation is likely to have a short-term negative effect on the action area which already lacks properly functioning riparian cover. Replanting of disturbed areas with native species will restore riparian function in the action area.

Riparian vegetation links terrestrial and aquatic ecosystems, influences channel processes, contributes organic debris to streams, stabilizes streambanks, and modifies water temperatures (Gregory et al. 1991). Removal of vegetation may result in increased water temperatures that will further degrade already impaired water temperatures in the action area. Elevated water temperatures may influence numerous attributes of salmonids including physiology, growth and development, life history patterns, disease, and competitive predator-prey interactions (Spence et al. 1996). Loss of vegetation can also reduce allochthonous inputs to the stream. Woody debris provides essential functions in streams including the formation of habitats. Additionally, the removal of vegetation decreases streambank stability and resistance to erosion. Riparian vegetation also contributes logs and branches that shape channel morphology, retain organic matter, and provide essential cover for salmonids. Tree roots stabilize stream banks and maintain undercut banks that offer prime salmonid habitat. Riparian vegetation forms a protective canopy, particularly over small streams, that helps maintain cool stream temperature in summer and insulate the stream from heat loss in winter.

Shaded streamside areas are preferred habitats of juvenile salmonids. The conservation BMPs for these projects include re-establishment of vegetation on all disturbed sites. Therefore, loss of riparian function is temporary. The long-term effect relative to baseline riparian conditions is expected to be discountable.

2.1.3.3 Population Level Effects

In the short term, project conducted under the proposed action are likely to cause temporary (construction-related) effects on water quality and riparian reserves. Effects are likely to arise at and near project sites. Other than localized, temporary effects of construction, the project is expected to decrease fish fatalities, improve fish passage for juveniles and adults, increase efficiency in stream diversions (leaving more water in the stream), and decrease human induced stream disturbance. As such, the overall purpose of the project is to contribute to improving the lambda estimates described above.

As described in the preceding section, the underlying construction action will directly and indirectly effect MCR steelhead. The disturbance of the streambed or streambanks, possible fish handling, and temporary loss of riparian vegetation are expected to result in pulsed sediment increases until vegetation is reestablished and will likely displace fish in the project vicinity. However, the effects of the proposed action will be minimized through design, timing of activities and the use of conservation measure BMPs as described above. As a result of these

considerations, NOAA Fisheries believes that the proposed action is unlikely to influence existing population trends or risks at the ESU scale for MCR steelhead.

2.1.4 Cumulative Effects

Cumulative effects are defined 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" (50 C.F.R 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to §7 of the ESA.

In the action area for this project, agricultural activities are the main land use. Riparian buffers are not properly functioning, containing little woody vegetation. Historic agricultural practices have contributed to downcutting, loss of floodplain connectivity and left little stream buffer vegetative cover. Other ongoing projects are in place in the subbasin to increase and/or improve riparian vegetative cover, reduce soil loss, and increase aquatic habitat complexity. 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 those species. Such actions are prohibited by §9 of the ESA, and subject to the incidental take permitting process under §10 of the ESA.

2.1.5 Conclusion

NOAA Fisheries' jeopardy analysis is based upon the present status of the species, environmental baseline within the action area, and the effects of the proposed action. The analysis takes into account the species' status because determining the effect upon a species' status is the essence of the jeopardy determination. Depending on the specific considerations of the analysis, actions that are found likely to impair presently properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat towards PFC at the population or ESU scale will generally be determined likely to jeopardize the continued existence of listed salmon, adversely modify habitat, or both. Specific considerations include whether habitat condition was an important factor for the decline in the listing decision, changes in population or habitat conditions since listing, and any new information that has become available.

NOAA Fisheries has determined that the effects of the proposed action will not jeopardize the continued existence of MCR steelhead. The proposed action is not expected to degrade baseline habitat functions necessary for the survival and recovery of the subject species. On the contrary, the overall purpose of the project is to improve habitat access and function. The action will cause short-lived turbidity, and possibly some temporary riparian vegetation loss but these impacts will not affect long-term baseline habitat functions.

Overall, the direct and indirect effects attributable to the proposed action are not expected to degrade the environmental baseline to the extent that the survival and recovery of listed salmonids will be compromised. Despite the effects described above, NOAA Fisheries has determined that the effects of the proposed actions will not jeopardize the continued existence of the MCR steelhead ESU or result in the adverse modification or destruction of their habitat. The determination of no jeopardy is based upon the following: 1) timing restrictions related to in-water construction are expected to minimize impacts to fish and their habitat, 2) replacement of a large number of inadequate fish screens is expected to result in a significant decrease in juvenile mortality, and an overall improvement in fish passage in the subbasin, 3) elimination of annual in-stream disturbance by irrigators is expected to improve overall stream habitat conditions, 4) increased efficiency of existing water diversions could result in less water removed from the stream. Accordingly, the proposed action is unlikely to adversely influence median population growth trends or risks. Therefore, NOAA Fisheries believes that the project will not jeopardize MCR steelhead.

2.1.6 Reinitiation of Consultation

Consultation must be reinitiated 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; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or habitat is designated that may be affected by the action (50 C.F.R § 402.16).

If BPA fails to provide specified monitoring information by the required date (section 2.2.3 No 5) NOAA Fisheries will consider that a modification of the action that causes an effect on listed species not previously considered and causes the Incidental Take Statement of the Opinion to expire. Consultation must also be reinitiated 5 years after the date this Opinion is signed. To reinitiate consultation, the BPA must contact the Habitat Conservation Division (Washington Branch) of NOAA Fisheries. At the request of reinitiation, the protective coverage of Section 7(o)(2), the Incidental Take Statement, will lapse.

2.2 Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to §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, or collect, or to attempt to engage in any such conduct. Harm is further defined as significant habitat modification or degradation that results in death or injury to listed species by "significantly impairing behavioral patterns such as breeding, spawning, rearing, migrating, feeding, and sheltering" (50 C.F.R. § 222.102). Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of

§7(b)(4) and §7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such takings is in compliance with the terms and conditions of this incidental take statement.

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

2.2.1 Amount Or Extent of Take Anticipated

NOAA Fisheries anticipates that incidental take of MCR steelhead is reasonably likely to result from the project activities described in the BA. Despite the use of the best scientific and commercial data available, NOAA Fisheries cannot estimate a specific amount of incidental take of individual MCR adult steelhead, juveniles, embryos, or incubating eggs. The mechanisms and extent of expected effects are summarized below.

NOAA Fisheries believes that there are several mechanisms through which take of MCR steelhead may occur. Direct harm may result from installation and construction activities (e.g., sediment mobilization, stream dewatering, and short term loss of riparian habitat). Indirect harm, through long term habitat modification could occur if the minimizing measures (i.e., BMPs) are disregarded.

The extent to which these mechanisms can result in effects on listed salmonids, or their habitat, can be described qualitatively, enabling reinitiation of consultation if such effects are exceeded during the project. The following descriptions indicate the action that could potentially cause take and the threshold values or condition where take will exceed levels anticipated by this consultation: (1) In water work (i.e., the risks associated with turbidity, dewatering and fish removal will only occur during the designated summer work window July 15 - Sept. 30), (2) temporary loss or alteration of riparian habitat will be limited to a maximum of 20 linear feet of disturbed streambank area, with the exception of on-bank screens for diversions greater than 1.0 cubic feet per second and disturbed areas will be revegetated.

Take associated with the habitat-related effects of actions such as these are largely unquantifiable and are not expected to be measurable as long-term effects on populations. Therefore, although NOAA Fisheries expects the habitat-related effects of these actions to cause some low level incidental take, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take because of those habitat-related effects. In instances such as these, NOAA Fisheries designates the expected level of take as “unquantifiable.”

NOAA Fisheries estimated the amount of take associated with those projects requiring isolation of the in-water work area (adapted from NOAA Fisheries 2002) using the following assumptions:
(1) The geographic area of actions covered by this Opinion is the Walla Walla River basin in southeast Washington; (2) the number of actions covered by this Opinion is less than 150; (3) approximately 25 percent of those actions will require isolation of the in-water work area; (4) each project requiring in-water work area isolation is likely to capture fewer than 100 juvenile salmonids; (5) of the ESA-listed fish to be captured and handled in this way, 98 percent or more are expected to survive with no long-term effects and 1-2 percent are expected to be injured or killed, including delayed mortality because of injury. Nonetheless, the more conservative estimate of 5 percent lethal take will be used here to allow for variations in experience and work conditions.

An estimate of listed fish to non-listed fish in the Columbia Basin was obtained using Northwest Fisheries Science Center (2001) data estimation of percentages of listed steelhead smolts arriving at various locations in the Columbia River Basin in 1999, then increased several fold to provide a conservative estimate of take due to projects requiring isolation of the in-water work area in 2002 (Table 1). Because many ESUs that these actions may effect are similar in appearance, assigning this take to groups below the species level is impossible.

Table 1. Estimate of nonlethal and lethal take associated with proposed projects requiring isolation of an in-water work area.

Species	Life stage	Estimated Total catch	Nonlethal Take of ESA listed fish	Lethal Take of ESA listed fish
MCR steelhead	juvenile	213	202	< 11

NOAA Fisheries will update this estimate of incidental take before March 31 each year after reviewing information from the preceeding year describing isolation of in-water work area operations. Even if monitoring proves the 5 percent mortality rate is accurate, isolation of in-water work area activities will not affect ESA-listed species at the population level. Capture and release of adult fish is not expected to occur as part of the proposed isolation of in-water work areas. Thus, NOAA Fisheries does not anticipate that any adult fish will be taken.

2.2.2 Reasonable and Prudent Measures

The following reasonable and prudent measures (RPMs) are non-discretionary. They are necessary and appropriate to minimize take of MCR steelhead and must be implemented in conjunction with the conservation BMPs (Section 1.2.3) and the T&Cs that follow in order for the exemption in §7(a)(2) to apply.

1. To minimize incidental take, BPA shall ensure the effective administration of the conservation BMPs, RPMs and T&Cs included in this Opinion.

2. Minimize the amount and extent of incidental take from construction activities. Measures will be taken to limit the duration and extent of construction within the OHWM and to time such work that the impacts to MCR steelhead are minimized.

3. Minimize the amount and extent of incidental take from construction activities in or near the creek through the use of effective erosion and pollution control measures in the area of disturbance and for the life of the project. The measures will minimize the movement of soils and sediment both into and within the creek, and stabilize bare soil over both the short term and long term.

4. Minimize the amount and extent of take from loss of instream habitat, through the use of measures to reduce impacts to riparian and instream habitat. Where impacts are unavoidable, measures will be take to restore or replace riparian and instream functions.

5. Ensure effectiveness of implementation of the RPMs. Erosion control measures and plantings for site restoration will be monitored and evaluated both during and following construction, and meet criteria as described below in the terms and conditions.

2.2.3 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the BPA must implement the conservation BMPs (section 1.2.3) and comply with the following terms and conditions, which implement the RPMs described above. Implementation of the conservation BMPs and the following 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 (effective administration and compliance), the BPA will:

    a. Ensure that all direct and indirect adverse effects to listed salmon and their habitats are within the range of effects considered in this Opinion, and that each applicable T&C from this Opinion is included as an enforceable term of the permit document.

    b. Ensure full implementation of the terms and conditions of the following incidental take statement. Departure from full implementation will result in the lapse of the protective coverage of § 7(o)(2) regarding "take" of listed species and may lead NOAA Fisheries to a different conclusion as to the effects of the continuing action.

c. Ensure that all projects are associated with valid state water rights.

d. Require landowners to provide reasonable access to projects permitted under this Opinion for inspection and monitoring of projects.

e. Reinitiate formal consultation within five (5) years of the date of issuance.

f. If BPA fails to provide specified monitoring information by the required date, NOAA Fisheries will consider that a modification of the action that causes an effect on listed species not previously considered and causes the Incidental Take Statement of this Opinion to expire.

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

a. All in-water construction work will require documentation of take using the format attached in Appendix I. BPA will ensure that NOAA Fisheries receive monthly monitoring reports of take beginning when the initial in-water construction activities commence until in-water construction activities cease. The reports will be sent to NOAA Fisheries , 510 Desmond Drive SE, Suite 103, Lacey, WA 98503. Although fish kills are not expected to occur and are not authorized by this incidental take statement, all salmonid carcasses caused by the action shall be collected and delivered to NOAA Fisheries to be identified at BPA's expense. The report and identification is critical in determining the extent of harm or kill by approved projects such as these and determining species occurrence in the project area. This provision is incorporated here by reference as a T&C of this Incidental Take Statement.

b. All work within the active channel is be completed between July 15 and September 30. Any additional 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.

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 that is 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. Any water diversion structure constructed for the purpose of supplying water for construction or for riparian plantings will be designed and monitored to pass juvenile salmonids. Water withdrawal rates from waters containing listed fish will not exceed

one percent of the flow of the supply stream and pump intakes will be properly screened according to NOAA Fisheries screening criteria (NMFS 1996).

3. To implement RPM No. 3 (construction activities), the BPA will ensure that all erosion and pollution control measures are included in the BA are included as special provisions in the contract. The BPA will ensure preparation and use of an erosion and sediment control plan (ESC). Erosion control measures will be sufficient to ensure that water quality conditions do not negatively impact MCR steelhead. The ESC will be maintained on site and will be available for review upon request.

   a. Erosion control measures are in-place at all times during the construction period. Construction within the project vicinity will not begin until all temporary erosion controls (e.g., sediment barriers and containment curtains) are in place.

   b. All exposed areas will be replanted with a native seed mix. 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.

   c. All equipment used for in-water work is cleaned prior to entering the active channel. External oil and grease is removed. Wash and rinse water is not discharged into streams and rivers without adequate treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

   d. The Contractor develops an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the BPA to ensure compliance with this PCP.

   e. Areas for fuel storage, refueling, and servicing of construction equipment and vehicles are at least 150 feet from the stream channel and all machinery fueling and maintenance occurs within a contained area. Overnight storage of vehicles and equipment must also occur in designated staging areas.

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

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

   a. Alteration of native vegetation is minimized. No protection of invasive exotic species (e.g., Himalayan blackberry is required, although no chemical treatment of invasive species will be used.

b. Riparian vegetation removed will be replaced with a mix of native seeds, shrubs, and trees, except within the footprint of the new screen diversions. Replacement will occur within the project vicinity according to WDFW planting prescription guidelines (species, size, protection, maintenance, replacement and survival rate).

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

a. NOAA Fisheries, Washington Habitat Branch, receive monthly in-water construction monitoring reports as described in T&C 2.a.

b. An annual implementation and effectiveness monitoring report will be submitted to NOAA Fisheries, Washington Habitat Branch, by January 31 of each year providing the following information:
   (1) Permittee name, permit number, and project name.
   (2) Type of activity
   (3) Project location, including compensatory mitigation site(s), by 6th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.
   (4) BPA or WDFW contact person
   (5) Starting and ending dates for work completed.
   (6) Dates work cessation was required due to high flows.
   (7) A summary of pollution and erosion control inspections, including and erosion control failure, hazardous material spill, and correction effort.
   (8) Total cleared area - riparian and upland
   (9) Summary of in-water work areas, capture and release (see attached Appendix I)
   (10) Streambank protection
      (a) Completed ISPG matrices used to select treatments.
      (b) Type and amount of materials used
      (c) Area effected, one bank or two (width and linear feet).

c. As stated in the BA, screen projects will be inspected within 1 year following project completion. Inspections will be conducted by qualified personnel for passage of the target fish species and life history stage. The inspection will document that screens meet NOAA Fisheries criteria (NMFS 1996) (depth, velocity, and flow) around the structure and ensure that diversion structures allow passage of adult and juvenile salmonids . In the event that the project does not meet the needs of the target fish species and life history stages, BPA will notify NOAA Fisheries in writing of the need to implement corrective actions to allow fish passage of the target species at the project site. Corrective actions must comply with the activities described in this Opinion or § 7 protection will lapse and consultation must be reinitiated.

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

d. Failed plantings will be replaced for a period of three years. If successive plantings have failed the BPA will replant an equally sized area in the project vicinity.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance Essential Fish Habitat (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 must provide conservation recommendations for any Federal or State activity that may adversely affect EFH (§305(b)(4)(A));

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with 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 C.F.R. 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 C.F.R. 600.810).

EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action will adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

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 1999), 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 potential adverse effects 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 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook.

3.4 Effects of Proposed Actions

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

1. Short term degradation of habitat due to dewatering of the wetted channel and diversion of river.

2 Short term degradation of water quality in the action area due to an increase in turbidity and contaminants during in-water construction.

3 Short term degradation of habitat due to disturbance or removal of riparian trees and vegetation.

3.5 Conclusion

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

3.6 EFH Conservation Recommendations

Pursuant to §305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that will 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 address the adverse impacts to EFH described above. Consequently, NMFS recommends that the BPA implement the following conservation measures to minimize the potential adverse impacts to EFH for chinook salmon:

1. Adopt Terms and Conditions 2.b through 2.c, as described in Section 2.2.3, to minimize EFH adverse effect No. 1.

2. Adopt Terms and Conditions 3.a through 3.f, and 5.b as described in Section 2.2.3, to minimize EFH adverse effect No. 2.

3. Adopt Terms and Conditions 4.a, through 4.c, and 5.b through 5.d as described in Section 2.2.3, to minimize EFH adverse effect No. 3.

3.7 Statutory Response Requirement

Pursuant to the MSA (§305(b)(4)(B)) and 50 C.F.R. 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. 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 C.F.R. 600.920(k)).

Appendix I
In-Water Construction Monitoring Report

In-Water Construction Monitoring Report
Minor Diversion Screen Installations for the Walla Walla Basin (WHB-02-189)

Start Date: _____
End Date: _____

Waterway: _____ Walla Walla County

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, Washington Habitat Branch, 510 Desmond Dr. SE, Suite 103, Lacey, WA 98503

4.0 REFERENCES

Berg, L. and T.G. Northcote. 1985. Changes in territorial, gill-flaring, and feeding behavior in juvenile coho salmon (*Oncorhynchus kisutch*) following short-term pulses of suspended sediment. 42:1410-1417.

Bisson, P.A, and R.E. Bilby. 1982. Avoidance of suspended sediment by juvenile coho salmon. North American Journal of Fisheries Management. 2:371-374.

Bjornn, T.C. and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 83-138 *in* W.R. Meehan (*ed.*), Influences of forest and rangeland management on salmonid fishes and their habitats. American Fisheries Society Special Publication 19. Bethesda, MD. 751 p.

Busby, P. J., T. C. Wainwright, G. J. Bryant, L. J. Lierheimer, R. S. Waples, F.W. Waknitz, and I. V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-NWFSC-27, 261 p.

Busby, P.J., R. Gustafson, G, Matthews, J. Myers, M. Ruchelshaus, T. C. Wainwright, R. S. Waples, J. Williams, P. Adams, G. Bryant, and C. Wingert. 1999. Updated Review of the Status of the Upper Willamette River and Middle Columbia River ESUs of Steelhead (*Oncorhynchus* mykiss. Northwest Fisheries Science Center. 49 p.

Columbia River Inter-Tribal Fish Commission. 2001. Web site. http://www.critfc.org/index.html

Frisch, A.J., and T.A. Anderson. 2000. Fish Physiology and Biochemistry 23(1):23-34.

Gregory, S.V., F.J. Swanson, W.A. McKee, and K.W. Cummins. 1991. An ecosystem perspective of riparian zones. Bioscience 41(8):540-551.

Greer, J.W. 1998. Letter to R. Waples, NMFS, dated 13 October 1998, from Director of Oregon Department of Fish and Wildlife, Portland, 4 pages plus attachments. (Cited in Busby et al. 1999).

Hemre G-I, and A. Krogdahl. 1996. Effect of handling and fish size on secondary changes in carbohydrate metabolism in Atlantic salmon, *Salmo salar*. Aquaculture Nutrition 2(4):249-252

Karl, David. 2002. Cooperative Compliance and Review Program: Diversion screen installations for the Walla Walla Basin. Biological Assessment and Essential Fish Habitat Assessment for Minor Diversion Screen Installations, April 12, 2002.

Karl, David. 2002. Personal communication.

Kuttel, Jr. M.P. 2001. Salmonid Habitat Limiting Factors Water Resource Inventory Area 32 Walla Walla Watershed 203 p.

Lloyd, D.S., J.P. Koenings, and LaPerriere, J.D. 1987. Effects of turbidity in fresh waters of Alaska. North American Journal of Fisheries Management 7:18-33.

McClure, M. B. Sanderson, E. Holmes, C. Jordan, P. Kareiva, and P. Levin. 2000. Revised Appendix B of standardized quantitative analysis of the risks faced by salmonids in the Columbia River Basin. National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, Washington. September.

Mendel, Glen, Virginia Naef, David Karl - Washington Department of Fish and Wildlife, 1999. Assessment of Salmonid Fishes and Their Habitat Conditions in the Walla Walla River Basin: 1998 Annual Report, Report to Bonneville Power Administration, Contract No. 1998BI07035, Project No. 199802000, 105 electronic pages (BPA Report DOE/BP-07035-1)

Mendel, Glen, Virginia Naef, David Karl - Washington Department of Fish and Wildlife. 2000. Assessment of Salmonid Fishes and Their Habitat Conditions in the Walla Walla River Basin of Washington: 1999 Annual Report, Report to Bonneville Power Administration, Contract No. 1998BI07035, Project No. 199802000, 105 electronic pages (BPA Report DOE/BP-07035-2)

Mendel, Glen, David Karl, Terrence Coyle - Washington Department of Fish and Wildlife, 2001. Assessment of Salmonid Fishes and Their Habitat Conditions in the Walla Walla River Basin of Washington: 2000 Annual Report to Bonneville Power Administration, Contract No. 00000485, Project No. 199802000. 116 electronic pages (BPA Report DOE/BP - 00000485-1).

National Marine Fisheries Service 1995. Juvenile Fish Screen Criteria. Developed by National Marine Fisheries Service Environmental & Technical Services Division Portland, Oregon. Revised February 16, 1995 http://www.nwr.noaa.gov/1hydrop/nmfscrit1.htm

National Marine Fisheries Service 1996. Addendum. Juvenile Fish Screen Criteria for Pump Intakes. Developed by National Marine Fisheries Service Environmental & Technical

Services Division Portland, Oregon May 9, 1996.
http://www.nwr.noaa.gov/1hydrop/pumpcrit1.htm

National Marine Fisheries Service. 1996. Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale. 31 p.

National Marine Fisheries Service. 2000b. Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act. 5 pp.

National Marine Fisheries Service. 2001. Biological Opinion on Corps of Engineers' Programmatic Consultation for Permit Issuance for 4 Categories of Fish Passage Restoration Activities in Washington.

National Marine Fisheries Service. 2002. Programmatic Biological Opinion and Magnuson-Stevens Act Essential Fish Habitat Consultation for Standard Local Operating Procedures for Endangered Species (SLOPES) for Certain Activities Requiring Department of Army Permits in Oregon and the North Shore of the Columbia River.

Nehlsen, W., J.E. Williams, and J.A. Lichatowich. 1991. Pacific salmon at crossroads: stocks at risk from California, Oregon, Idaho, and Washington. Fisheries 16(2):4-21.

Nordlund, Bryan. 1996. Designing fish screens for fish protection at water diversions. National Marine Fisheries Service, Portland, Oregon. 38 pages electronic version.
http://www.nwr.noaa.gov/1hydrop/hydroweb/docs/usfws_97.htm

Northwest Fisheries Science Center. 2001. Memorandum from Michael Schiewe (NWFSC) to Donald Knowles(NOAA Fisheries); Estimation of Percentages for Listed Pacific Salmon and Steelhead Smolts Arriving at Various Locations in the Columbia River Basin in 2001.

Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995.
(http://www.nwr.noaa.gov/1salmon/salmesa/4ddocs/lrgwood.pdf)

Parametrix. 1980. Juvenile Salmonid Study Draft Report. Port of Seattle, Seattle Washington by Parametrix, Bellevue, WA. Preliminary Report Document No. 81-0213-003. 56 pp.

PFMC (Pacific Fishery Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan. Appendix A: Description and Identification of Essential Fish Habitat, Adverse Impacts and Recommended Conservation Measures for Salmon. Portland, Oregon.

Regional Road Maintenance Technical Working Group (RRMTG). 2000. Regional Road Maintenance Endangered Species Act Program Guidelines, Final Draft December 15, 2000. http://www.metrokc.gov/roadcon/bmp/pdfguide.htm

Sampson, Mel, Dave Fast - Yakama Nation, "Monitoring And Evaluation" Project Number 95-063-25 The Confederated Tribes And Bands Of The Yakama Nation "Yakima/Klickitat Fisheries Project" Final Report 2000, Report to Bonneville Power Administration, Contract No. 00000650, Project No. 199506325, 265 electronic pages (BPA Report DOE/BP-00000650-1)

Saul, D., L. Gephart, M. Maudlin, A. Davidson, L. Audin, S. Todd, and C. Rabe 2000. (Draft) Walla Walla River Watershed Assessment. Washington State University Center for Environmental Education. Pullman, WA.

Servizi, J.A. and D.W. Martens. 1992. Sublethal responses of coho salmon (*Oncorhynchus kisutch*) to suspended sediments. Canadian Journal of Fisheries and Aquatic Sciences. 49:1389-1395.

Sigler, J.W., T.C. Bjornn, and F. H. Everest. 1984. Effects of chronic turbidity on density and growth of steelhead and coho salmon. Transactions of the American Fisheries Society 113:142-150.

Spence, B.C., G.A. Lomnicky, R.M. Hughes, R.P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. http://www.nwr.noaa.gov/1habcon/habweb/ManTech/front.htm

Warner, Eric J., Fritz, Rob L. 1995. The Distribution and Growth of Green River Chinook Salmon (*Oncorhynchus tshawytscha*) and Chum Salmon (*Oncorhynchus keta)* Outmigrants in the Duwamish Estuary as a Function of Water Quality and Substrate. Muckleshoot Indian Tribe Fisheries Department Water Resources Division. 71 pp.

Washington Department of Ecology (WDOE). 2000 Water quality in Washington State (Section 303d of the Federal Water Act). Washington State Department of Ecology, Olympia, Washington.

Washington Department of Fisheries and Washington Department of Wildlife. 1993. Regional supplement to 1992 Washington State Salmon and Steelhead Stock Inventory. Appendix Three; Columbia River stocks.

Washington Department of Fish and Wildlife and Inter-Fluve. 2002. Aquatic Habitat Guidelines: An Integrated Approach to Marine, Freshwater, and Riparian Habitat Protection and Restoration; Integrated Streambank Protection Guidelines. (http://www.wa.gov/wdfw/hab/ahg/ispgdoc.htm).