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NMFS Tracking
No.: 2003/01412

June 10, 2004

Daniel M. Mathis, P.E.
Federal Highway Administration
Suite 501 Evergreen Plaza
711 South Capitol Way
Olympia, Washington 98501-1284

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for The West Powerhouse Road Bridge Replacement Project, Yakima County, Washington (HUC 170300020307, Lower Naches River)

Dear Mr. Mathis:

Enclosed is a document containing a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed West Powerhouse Road Bridge Replacement Project, Lower Naches River, Yakima County, Washington. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Middle Columbia River steelhead (*Oncorhynchus mykiss*). As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

This document contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook and coho salmon. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

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

Sincerely,

For Michael R Crouse

Regional Administrator
D. Robert Lohn

Enclosure

cc: Gene Soules, Yakima County
Michael Kulbacki, FHWA

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

West Powerhouse Road Bridge Replacement Project
Middle Columbia River Steelhead ESU
Lower Naches River Subwatershed (170300020307)
Yakima River Watershed
Yakima County, Washington

Lead Action Agency: Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service
Northwest Region

Date Issued: June 10, 2004

Issued by: For Michael R Crouse

D. Robert Lohn
Regional Administrator

NMFS Tracking No.: 2003/01412

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1.0 INTRODUCTION

This document transmits NOAA's National Marine Fisheries Service (NOAA Fisheries) biological opinion (Opinion) under the Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultation under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). It is based on our review of a proposal by the Federal Highway Administration (FHWA) to fund a project to remove an existing bridge, and replace it with a new bridge on a new alignment approximately 200 feet downstream. The proposed project is on the Naches River roughly four miles upstream of the confluence of the Naches and Yakima Rivers, Yakima County, Washington. The Naches River is a major tributary to the Yakima River, which drains in turn to the Columbia River. The Naches River is within the geographic range of the Middle Columbia River (MCR) evolutionarily significant unit (ESU) for threatened steelhead (*Oncorhynchus mykiss*) and is EFH for chinook (*O. tshawytscha*) and coho (*O. kisutch*) salmon. An ESU is considered a distinct population segment appropriate for protection under the ESA.

The ESA of 1973 (16 U.S.C. 1531 *et seq.*), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA Fisheries and United States Fish and Wildlife Service (together "the Services"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitat[1]. The Opinion is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402.

The analysis also fulfills the EFH consultation requirements of the MSA. The MSA (16 U.S.C. 1801 *et seq.*), as amended by the Sustainable Fisheries Act, established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fishery management plan. 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 (section 305(b)(2)).

1.1 Background Information and Consultation History

The FHWA presented a Biological Assessment (BA) to NOAA Fisheries on November 12, 2003, describing a project to replace the West Powerhouse Road Bridge over the Naches River in Yakima County, Washington. Yakima County Public Works Department (YCPW) plans to improve safety and mobility by replacing the bridge, widening and realigning road approaches, and improving sidewalks. The FHWA has provided bridge replacement funding, thereby creating a Federal nexus triggering the two requirements for consultation.

Demand for use of the West Powerhouse Road Bridge and West Powerhouse Road has increased significantly over the last decade. However, YCPW currently restricts use and limits weight because of the narrow width, structural deterioration, poor sight distance, and intersection

[1] Under development. On April 30, 2002, the U.S. District Court for the District of Columbia approved a NOAA Fisheries consent decree withdrawing a February 2000 Critical Habitat designation for this and 18 other ESUs.

geometry at the bridge approaches, which restrict large vehicle access. The restricted capacity often causes long delays in the project area.

Information in this document came from the BA, telephone conversations with Widener and Associates, and an April 10, 2003 site visit with Ross Widener and Mary Hamilton of Widener and Associates, Gene Soules from the Yakima County Public Works Department, Diane Driscoll of NOAA Fisheries, and Anne Robinson from the Army Corp of Engineers (COE).

1.2 Description of the Proposed Action

Proposed actions are defined in the Services' ESA consultation regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." The MSA at 16 U.S.C. 1855(b)(2) defines a Federal action as "any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency." The FHWA funding for this project triggers consultation with NOAA Fisheries under both the ESA section 7(a)(2) and the MSA section 305(b)(2).

The bridge replacement project conducted by the YCPW includes removing the existing steel truss West Powerhouse Road Bridge over the Naches River, and replacing it with a new pre-stressed concrete girder bridge, on a new alignment next to the State Route (SR) 12 bridge approximately 200 feet downstream. They will realign the bridge approaches to connect with the new bridge location. Construction will include pile driving to install temporary work platforms, removing the existing bridge, clearing and grubbing, building a new bridge construction (six shafts, placing columns, abutments, caps, concrete girders, constructing permanent soldier pile wall, grading, paving, striping), destroying the abandoned roadway sections, constructing an upland dike, and planting vegetation.

Immediately downstream of the existing bridge on the south bank is the Naches-Cowiche irrigation diversion and fish screen. On the north bank is a fish ladder managed by the Bureau of Reclamation (BOR). The project is designed to maintain the integrity of these two structures.

1.2.1 Construction of the New Bridge

The YCPW will stage construction of the new bridge on the north bank and on a roughly 80-foot square work platform extending from the south bank. Bridge construction will proceed in three steps: 1) drilling shafts, installing columns, caps, and abutments; 2) placing concrete girders; and 3) constructing the deck. The YCPW will build two shafts at the north and south abutments, and they will place an additional shaft at each of the two intermediate pier locations. The south intermediate pier will be below the ordinary high water mark (OHWM), all others are above the OHWM. The YCPW will construct the north intermediate pier in the existing riprap fill slope associated with the SR 12 bridge and they will build the south intermediate pier on a gravel bar reached from the work platform extending from the south bank. The two shafts for each abutment will be roughly five feet in diameter, and the shafts for the intermediate piers will be roughly10 feet in diameter. Steel reinforced concrete piers will be built inside an 11 to 15-foot casing. The outer casing will act as a cofferdam while they build the piers. They will install the outer casing using a vibratory hammer. The YCPW will remove any waste material produced

inside the casing and dispose of it according to Federal, State, and local laws. Riprap slope protection is already present above the OHWM in the location of the north piers. Therefore, YCPW will not place any more riprap protection on the north side of the bridge. Protecting the south abutment will require approximately 100 cubic yards of new riprap placed above the OHWM. The new riprap area will cover roughly 667 square yards on the south bank beneath the bridge.

After the piers are in place, YCPW will build concrete abutment walls on top of the north and south piers and place a column and cap on top of the two intermediate piers. The abutment walls and pier caps will support the concrete girders. Once the girders are in place, the YCPW will form a cast in place concrete deck.

1.2.2 Bridge Approach Changes

The new approaches will include two 12-foot asphalt lanes and two 8-foot asphalt shoulders. They will obliterate approximately 200 feet of the existing road on the south side of the river and replace it with a stormwater retention pond. On the north side of the river, they will realign roughly 1,000 feet of the West Powerhouse Road between the bridge and the first corner of the existing road. The YCPW will also remove 900 feet of road on the north side of the river and restore the area to a more natural condition.

1.2.3 Retaining Walls

The project will employ two types of retaining walls. One will be a soldier pile wall and the other will be a mechanically stabilized earth (MSE) wall. Soldier pile walls are used when cutting into existing hillsides or embankments. Creating new embankments, such as those for the new bridge approaches, will be stabilized with MSE walls.

The soldier pile wall will be on the north side of the new bridge. This wall will allow the creation of a work platform for constructing piers one and two, and the YCPW will design it to eliminate the interference between the existing SR 12 embankment and the eastern span girders. The MSE wall will reduce the embankment footprint of the south approach so as not to limit maintenance operations for the irrigation outlets and fish screens.

1.2.4 Dike Construction

The proposal includes constructing a dike on the north side of the river starting at the upstream side of the existing bridge. The compacted fill dike will be roughly 400 feet long, 6 feet high, and 20 feet wide. The dike will be vegetated with native trees, shrubs and grasses. All levee construction will be above the OHWM. The dike is to protect the fish ladder and the north side of the bridge during flood events. During the 1996 flood, the Naches River flowed overland (through a private park) upstream of the fish ladder and re-entered the main channel at the SR 12 embankment below the fish ladder. The large cut created during the 1996 flood posed a threat to both the fish ladder and the abutments of the SR 12 bridge.

1.2.5 Temporary Work Platform

The YCPW will need two temporary work platforms to simplify building the new bridge and removing the existing bridge. The first temporary platform will be next to and upstream of the new bridge. It will extend 80 feet from the south bank, be roughly 80 feet wide and be supported by 28 piles. The second platform, for removal of the existing bridge, will be placed roughly 20 feet upstream from the existing bridge, extend from bank to bank, will be approximately 252 feet long and 22 feet wide, and supported by 52 piles. The YCPW plans to use a vibratory hammer for the pile driving and, if necessary, an impact hammer to verify pile weight bearing capacities. If used, the impact hammer will be a hydraulic impact hammer and will be used only outside the wetted perimeter of the stream. Either 18- or 24-inch diameter open-ended steel pipes will support both temporary bridges. Each pile will temporarily disturb an area of roughly 254 to 452 inches squared, (total area affected for both platforms is roughly 565 to 1005 yards squared). Once work has been completed on the new and existing bridges, the bracing and stringers of the temporary work platforms will be removed and the piles will all be extracted using a vibratory hammer. To avoid turbidity, the YCPW will remove pilings and dismantle the temporary platforms during the low flow period (July 15 to October 31) after fry have emerged from redds and before spawning adults move upstream through the area.

1.2.6 Removal of Existing Bridge

The YCPW will remove the existing bridge deck from the temporary work platform in two steps: 1) remove the concrete bridge deck; and 2) remove the steel truss. At a minimum, a catchment structure will be constructed out of filter fabric supported by chain link fencing and suspended below the existing truss. After the decking is removed, the entire truss will be picked up with a pair of cranes and moved to the work platform. The YCPW will then roll the truss off the work platform onto the north bank, cut the truss into pieces and dispose of the material according to Federal, State and local laws. The existing abutments for will stay in place to maintain the structural integrity of the Naches-Cowiche irrigation diversion and the BOR fish ladder.

1.2.7 Impervious Surface and Stormwater Treatment

The project will add 0.85 acres of impervious surface to the West Powerhouse Road and Bridge in the action area. Stormwater from the entire project area will be channeled, via ditches and storm sewer, to two stormwater retention ponds, one on the north side of the river and one on the south.

The north pond will be just north of the proposed dike, between the existing and proposed roadways. It will outflow through a pipe under the dike and discharge into a ditch that then empties into the river between the proposed roadway and the fish ladder. The south pond will be in part of the existing road to be removed. The south pond will drain into ditches along the road that empty into the open irrigation canal south of the river between Powerhouse Road and SR 12.

The two ponds will treat 140% of the storm water runoff from the net increase in impervious surface. The north pond will collect runoff from the north half of the bridge and the north approach, while the south pond will serve the south half of the bridge and approach. The ponds will be dual-celled ponds, divided by an earthen berm. The inflow into the first cell is designed

to settle out suspended solids. The second cell allows for the growth of algae to remove some dissolved pollutants. The outlet from the second cell will be below the water surface level so that oils and other low density pollutants will float to the surface and remain in the second cell.

1.2.8 Work Below the Ordinary High Water Mark, Including Pile Driving

To construct and remove the temporary work platforms, and build the south intermediate pier, the YCPW will need to drive 80 piles below the OHWM. Pile driving with a vibratory hammer within the wetted perimeter of the stream will take place between June 15 and October 31 to minimize impacts to MCR steelhead. Discussions with Washington Division of Fish and Wildlife (WDFW) area habitat biologist Eric Anderson(pers. comm. 2004) indicate that the hydraulics of the action area make it poor habitat for spawning with more suitable areas located both upstream and downstream of the site. However, the YCPW will conduct and document visual surveys for the presence of redds in the action area prior to beginning in-water work. If necessary, pile spacing will be adjusted as much as possible to avoid direct contact with any redds observed in the construction area. Pile driving outside the wetted perimeter will take place between April 1 and October 31. The YCPW will use an impact hammer only to verify pile weight bearing capacities. When used, the impact hammer will be a hydraulic impact hammer and will be used only outside the wetted perimeter of the stream. The YCPW will remove piles within the wetted perimeter using a vibratory hammer, to occur only between July 15 and October 31, when no MCR steelhead redds are present and adults are not expected to be in the area. By removing the piles between July 15 and October 31 the YCPW will reduce the exposure of fish to soil disturbance and turbidity. Emergence should be completed by July 15 so juvenile and young-of-year fish in the area are mobile, and adults are not expected to be in the area at that time. Use of a vibratory hammer exposes juvenile steelhead to less noise and sediment than other piling installation or extraction techniques.

The only new pier (south intermediate pier) to be placed below the OHWM will be positioned on a gravel bar that has been outside the wetted channel during the low flow season for many years. To protect the streambank area, work will be done from the temporary platform and a casing will be used (see section 1.2.1) to contain all excavated materials and prevent any concrete or debris from entering the river.

1.2.9 Vegetation Removal and Replacement

The YCPW will permanently remove roughly 2 acres (87,120 square feet) mostly of upland vegetation. The proposal removes three trees from the Naches River riparian zone and approximately 14 trees from the upland, near the north approach realignment. Approximately 0.6 acres (56,400 square feet) of the current roadway will be returned to a more natural vegetative state. All trees removed will be replaced at a ratio of three-to-one in the footprint of the excavated bridge approaches and the riparian area. Revegetation of all disturbed sites will include trees, shrubs and grasses native to the area.

1.2.10 Conservation Measures

The FHWA will ensure that the following conservation measures from the BA (page 52 and phone conversations) are carried out to minimize project impacts on listed species.

1) Erosion control best management practices (BMPs) such as silt fences and straw bales will be in place before earthmoving activities take place and will be maintained throughout construction.

2) All equipment will be in good working order and cleaned before working near the stream.

3) All refueling operations will take place at least 50 feet from an open water body on the south side of the river, and 150 feet on the north side of the river. Fuel and other hazardous products will be stored in a secure manner at least 150 feet from any water body. A Spill Prevention Control and Countermeasures Plan will be prepared and approved before initiation of construction.

4) All welding will be fully contained to minimize the potential of welding slag entering the river. A containment structure or system will be designed, approved by YCPW, and in place before construction begins.

5) A debris catchment structure (minimum of a chain link fence covered with filter fabric suspended below the existing truss) will be designed, approved by YCPW and in place before any deck removal activities begin.

6) A lead abatement plan (for paint residue) will be prepared according to appropriate State and Federal guidelines.

7) All waste material will be disposed of following Federal, State, and local laws.

8) Pile driving outside the wetted perimeter will take place only between April 1 and October 31. Pile driving below the OHWM will occur only between June 15 and October 31.

9) Work below the OHWM will take place only between June 15 and October 31.

10) A vibratory hammer will be used for most pile driving operations. Load-bearing capacity tests may be done with an impact hammer, outside the OHWM.

11) During pile driving with an impact hammer, the hammer's energy setting will be incrementally increased over approximately five minutes.

12) An outer casing will act as a cofferdam during shaft construction to prevent concrete from entering the waterbody.

13) Concrete will cure a minimum of seven days before contact with surface water.

14) During removal of material within the shaft casing, the work bridge will be lined with filter fabric or plastic to capture any spills. Trucks used to haul material will be either watertight or lined with plastic.

15) The revegetation plan will include a replacement ratio of three-to-one for all trees removed, revegetation of all disturbed sites, and all species planted or seeded will be native to the area.

1.3 Description of the Action Area

An Action Area is defined by the Services' regulations (50 CFR Part 402) 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 found at the West Powerhouse Road Bridge, which spans the Naches River approximately four river miles (RM) upstream from the confluence of the Naches and Yakima Rivers. The action area consists of approximately 6.8 acres of upland and 3.2 acres of aquatic area. In-water disturbance, i.e., suspended sediments, substrate disturbance, noise and pressure from pile driving and removal) will cover the entire 200-foot width of the river (not all at one time) and extend roughly 700 linear feet along both sides of the Naches River from 100 feet upstream of the existing bridge to 300 feet downstream of the new bridge. Water quality criteria are based on guidance by the Washington State Department of Ecology (WDOE 2003) section 401 Water Quality Certification. The 6.8 acres include the existing bridge and its approaches (to be demolished and the area revegetated), the work bridge, nearby staging areas, new stormwater ponds, the site of the new bridge and its approach roads. The project is within the Lower Naches River subwatershed 6th field hydrologic unit code (HUC). This area serves as migratory corridor, spawning, and rearing habitat for MCR steelhead and EFH for Middle Columbia River Spring-run chinook and coho salmon.

2.0 ENDANGERED SPECIES ACT - BIOLOGICAL OPINION

The purpose of consultation under section 7 of the ESA is to ensure that actions undertaken by Federal agencies are not likely to jeopardize the continued existence of threatened or endangered species, or to destroy or adversely modify their designated critical habitat. Because MCR steelhead do not currently have designated critical habitat, that portion of the analysis will not appear below.

2.1 Evaluating the Effects of the Proposed Action

The standards for determining jeopardy as set forth in section 7(a)(2) of the ESA are defined by 50 CFR part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. 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

injury and mortality attributable 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 species' life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize, NOAA Fisheries must identify reasonable and prudent alternatives for the action, if any.

2.1.1 Biological Requirements

Biological requirements are those conditions necessary for listed species to survive and recover to naturally reproducing population levels large enough to maintain: spatial distribution; genetic diversity and heterogeneity; and ability to adapt to and survive environmental and anthropogenic variation, that they would be self-sustaining in the natural environment. At such a time protection under the ESA would no longer be unnecessary.

The biological requirements of MCR steelhead include adequate 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). The specific biological requirement affected by the proposed action is water quality (turbidity, possible chemical contaminants).

2.1.2 Status of Listed Species

The listing status and biological information for the listed species that is the subject of this consultation are described below in Table 2.

Species	**Listing Status**	**Critical Habitat**	**Protective Regulations**	**Biological Information**
Middle Columbia River steelhead	March 25, 1999, 64 FR 14517. Threatened	Not Designated[2]	July 10, 2000; 65 FR 42422	Busby, *et al.* 1996

Table 2. 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 MCR steelhead population sizes are much lower than historic levels, and at least two extinctions are known to have occurred in the ESU. In larger rivers (John Day, Deschutes, and Yakima), steelhead abundance has been severely reduced: it is estimated that the Yakima River had annual run sizes of 100,000 fish before the 1960's; more recently (early 1990's), natural escapement has been about 1,200 fish (WDF *et al.* 1993). Across the entire ESU, the wild fish escapement has averaged 39,000 and total escapement 142,000 (includes hatchery fish). Within the Yakima River Basin, adult steelhead returns have averaged 1,693 fish (range 505 (1996) to 4,525 (2002)) between 1985 and 2003 as monitored at Prosser Dam (RM 47.1; YSS 2001; 2001 through 2003 data from Yakima-Klickitat Fisheries Program (YKFP), available at: www.ykfp.org). The comparatively large return of MCR steelhead to the Yakima Basin in 2002 reflects high numbers of returning salmon and steelhead observed across to the Columbia basin

in the past two years. The large proportion of hatchery fish, concurrent with the decline of wild fish, is a major risk to the MCR ESU (WDF *et al.* 1993; Busby *et al.* 1996; March 10, 1998, 63 Fed. Reg. 11798,).

Adult summer steelhead enter the Columbia River in the spring and migrate through the summer and fall. Generally, adult MCR steelhead migration into the Yakima Basin peaks in late-October and again in late February or early March, concurrent with the spawning run. They reach their natal waters in the late spring and eggs are deposited that usually hatch by July. Juveniles usually rear in the stream for two years before outmigrating. Steelhead are produced almost entirely from the lower Yakima Basin, especially in Satus Creek, Toppenish Creek, and the lower Naches River. Radio telemetry studies conducted in the Yakima River basin by NOAA Fisheries in 1989-1993 (Hockersmith *et al.* 1995) identified steelhead spawning areas. Fish were radio tagged in the lower river in the summer, and then tracked to their spawning areas the following winter and spring. Spawning distribution of these tagged fish in brood years 1990-1992 was 48% in the Satus Basin, 32% in the Naches Basin, 11% in the Toppenish Basin, 2% in the Marion Drain, 4% in the Yakima River mainstem below Roza Dam, and 3% in the Yakima River or tributaries above Roza Dam. Within the Naches Basin, most steelhead spawning (85%) occurred in the Naches River mainstem, primarily from river mile 2.7 (Cowiche Creek confluence) to the Little Naches River, with the remainder distributed in lower reaches of the Bumping River, Little Naches River, and Rattlesnake Creek (Cramer *et al.* 2003). The WDFW spawning surveys have documented redds upstream of the action area but based on the local hydraulics, the WDFW considers it unlikely that redds will be located in the action area.

2.1.3 Environmental Baseline

The environmental baseline represents the current set of conditions to which the effects of the proposed action would be added. The term "environmental baseline" means "the past and present impacts of all Federal, state, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the Action Area that have already undergone formal or early section 7 consultation, and the impact of state or private actions that are contemporaneous with the consultation in process " (50 CFR 402.02).

The proposed project is in the Lower Naches River, a major tributary to the Yakima River in Yakima County, Washington. The Yakima River originates on the eastern slopes of the Cascade Mountains and flows southeast approximately 215 miles to Richland, Washington where it enters the Columbia River at RM 335.2. The Yakima subbasin occupies two physiographic provinces (the Columbia Plateau and Cascade Mountains), and three major ecoregions (Cascades, Eastern Cascades Slopes and Foothills and Columbia Basin (Omernik 1987)). Consequently, climate, topography, precipitation, and vegetative cover are highly variable. In addition, the distribution and type of aquatic and terrestrial habitat is quite variable, supporting a wide range of species. Historically, the Yakima River subbasin supported abundant and diverse runs of salmon and steelhead that now return in a fraction of their historic numbers (Nehlsen *et al.* 1991; Tuck 1995; Busby *et al.* 1996; NMFS 1996a). River and floodplain morphology are largely composed of single-thread and braided channels that occupy alluvial floodplains of glacial origin (*e.g.*, outwash and morainal material). Anthropogenic activities in the floodplain of the Yakima River, including railway and highway construction, have leveed, armored,

realigned, and shortened the historic channel, virtually eliminating natural river-floodplain interactions.

As the largest tributary to the Yakima, the Naches River extends 44.6 miles from its mouth at Yakima RM 116.3 to the point at which the Bumping River and the Little Naches River converge to form the Naches River. It has a moderate gradient averaging 0.58% (0.28- 0.71% range) and contains a small, roughly four mile long unconfined alluvial section centered on the Rattlesnake Creek confluence (Naches RM 27.8) and a large unconfined alluvial section extending from the Wapatox Dam (RM 17.1) to the Cowiche Creek confluence (RM 2.7). Outside these alluvial areas the river is generally confined although not so tightly as to preclude most side channels and islands. Significant tributaries, from the mouth upstream, include Cowiche Creek, Tieton River, Rattlesnake Creek, Nile Creek, Bumping River, and Little Naches River

The Naches River supports spring chinook, coho, steelhead, rainbow trout and bull trout, and several other salmonid and non-salmonid species (WDFW 1998 in YSS 2001). Hockersmith *et al.* (1995) documented steelhead spawning throughout the Naches and all of its tributaries except the Tieton and American Rivers.

Above the Tieton confluence, the historical "upper Naches" probably bore a fair resemblance to the river of today. Large woody debris and the scour pools and gravel bars they create would have been much more abundant, but confinement and high spring flows probably would have prevented the formation of massive log jams. Old growth timber (ponderosa pine below grading into Douglas fir) would have been found at the river's edge above Rattlesnake Creek, and small side channels and spring brooks in the wider portions of the valley would have been more common than they are today. Highway 410 parallels most of the left bank of the upper Naches now and virtually the entire embankment is riprapped. In many areas homes on the right bank are protected by riprapped revetments as well. Bedload movement is apparent in some more narrowly confined reaches today, and the right bank revetments have cut off historical side channels and spring brooks. Historically, the 14.8 miles of river between the Tieton confluence and Cowiche Creek spread over a mile-wide valley in multiple channels and spring brooks. As expected in a complex channel below a transport reach, large woody debris was abundant and retained gravels transported from upstream, eventually forming islands that still exist. As usual in unconfined reaches, flooding during the peak of spring runoff was an annual event. The dominant riparian tree was and is the cottonwood, patches of which at various stages of maturity were found interspersed with willow and dogwood on more recently disturbed areas. The valley reached its maximum width in the lower two to three miles of the reach, before being abruptly pinched off by pincers of basalt just above Cowiche Creek. This was a zone of strong upwelling, and spring brooks and wall-based channels erupted at many points on the left bank, ultimately coalescing into a substantial return channel that became known as Buckskin Slough. A large side channel now called the South Naches Channel diverged from the right bank at the city of Naches (RM 14.0) and flowed over a low terrace for about four miles, collecting spring brooks and wall-based channels erupting at the foot of the steep valley wall to the southeast before reentering the Naches River. Below the nick point at the Cowiche confluence, the river was again unconfined. Likely this was historically an alluvial fan, as bedload washed at high velocity settled out in the slower waters below, creating side channels and spring brooks downstream and entering the Yakima in multiple channels (Haring 2001; YSS 2001).

The Naches River has two large diversion dams, Wapatox (RM 17.08) and Naches Cowiche (RM 3.6). Each of these diversion dams maintains screening structures installed to prevent upstream migration of adults or downstream entrainment of juvenile salmonids into the irrigation systems. Groundwater recharge occurs via precipitation and from the application of irrigation water, the latter of which increases recharge over pre-irrigation times. Kinnison and Sceva (1963) noted that water table elevations rose substantially during the onset of irrigation in the first half of the century. Because of this, drains were often cut to reduce high water tables and prevent the development of alkaline soils. Thus, the pattern of ground water recharge has been substantially altered with post-irrigation recharge following the seasonal patterns of irrigation. Historically, recharge would have occurred mainly in the winter and spring when evapotranspiration was low and precipitation was high. The result has been a reduction in the frequency, magnitude and duration of flood plain inundation because of reservoir storage. Thus, recharge of cold, spring-melt water into the aquifer systems has been replaced by recharge of warmer water derived from irrigation later in the spring and summer.

Development has radically changed the structure and hydrograph of the lower Naches watershed. The downstream end of the valley has been converted to orchards, homes, a golf course/trailer park/RV Park and, below the Cowiche confluence, a freeway and shopping mall. Highway 12 bisected the floodplain and restricted the river to half or less of its historical width. Perhaps half the original cottonwood stands remain, the rest having been cleared for various kinds of development. Large woody debris is scarce, probably because of accelerated velocities and removal by private citizens, although some was recruited from upstream during the flood of 1996. The South Naches channel plus many smaller spring brooks and side channels on the left bank, have been channelized and converted into irrigation canals. The diversity of channel types has been greatly reduced. What was formerly a valley-wide complex of main channels, side channels, wall-base channels, sloughs and wetlands is now generally two or three larger channels connected by braids, with several narrow, brushy side channels between a quarter mile and four miles. The river is usually confined on both sides either by basalt canyon walls or by riprapped dikes or road embankments. The lowermost 2.7 miles below Cowiche Creek has been tightly confined against basalt walls by the embankment of Highway 12 and effectively converted into a fast run. The river did, however, change course after the flood of 1996 and now runs through the middle of a stand of cottonwood for about a mile (YSS 2001).

As important as any of the geomorphological changes is the change in substrate character and its implications for steelhead spawning. The proportion of fines in the lower Naches appear to be quite high. A study by Joy and Patterson (1997, cited in YSS 2001) found that the Naches River carries a high total suspended solid (TSS) load (94 tons/day) during spring runoff (March to July) relative to July to October (27 tons/day). The high TSS load from the Naches is believed to be due to logging activities and sediment releases from the reservoirs (Joy and Patterson 1997, cited in YSS 2001). However, further studies are necessary to distinguish the importance of these sources vs. other variables, such as the influence of the “flip-flop” flow regime. The dominant substrate type has changed as well. Whereas gravel bars formed behind log jams and debris piles historically, the narrower, faster flows of the Naches now apparently transport most smaller particles into the middle Yakima. The substrate of the lower Naches is now a mix of large (5-inches to 7-inches) cobble and sand except in some floodways and side channels where smaller gravels heavily embedded in sand are found. Steelhead can and do spawn in the lower

Naches. Indeed, more than 40% of all the Naches radio tagged steelhead that spawned in the Naches in the Hockersmith *et al.* study (1995), spawned in the lower Naches.

Apparently, steelhead are spawning in higher elevation side channels and floodways inundated during April and May. The viability of many of these redds is, however questionable, given the rapid drop of flows during the late spring. It is very likely that many are dried up before emergence is complete in June and July. The hydrograph has been changed by factors acting both within and outside the lower Naches. The major impact is from the "flip-flop" river operation scheme. In practice flip-flop consists of releasing most of the water needed by irrigators from the upper Yakima reservoirs until early September. During this time, releases from Rimrock (and to a much lesser degree Bumping) are reduced. Then in early September, the pattern of releases is reversed ("flip-flopped"), and releases from Rimrock and Bumping provide all the water needed for the diversions at Wapato and Sunnyside Dam, and the upper Yakima releases are curtailed.

Within the lower Naches, up to 450 cubic feet per second (cfs) is diverted at Wapatox Dam (RM 17.1) year round. Most of this water is used for hydroelectric generation and all but 50 cfs (which is used for irrigation April 1 – October 14) is returned to the river at a powerplant located at RM 9.7. In addition, there are several clusters of smaller diversions on the lower Naches below Wapatox. The South Naches Channel (RM 14.0) diverts up to 141 cfs (YSS 2001) for seven small irrigation canals serving orchards on the right bank of the lower Naches, and discharges part of its diverted flow back to the river at RM 10. Below the South Naches Channel diversion, the Kelley-Lowerey (RM 13.7) diverts up to 30 cfs, the Gleed (RM 9.4) up to 40 cfs, the Congdon (RM 8.8) up to 55 cfs, the Chapman-Nelson (RM 6.0) up to 40 cfs, the City of Yakima (RM 3.6) up to 15 cfs and the Naches-Cowiche (RM 3.6) up to 40 cfs. The portion of the lower Naches most severely affected by these diversions is the so called "bypass reach," which extends 7.4 miles from the Wapatox diversion to the powerplant outfall. Within the bypass reach, the Naches River must supply the needs of the South Naches Channel and the Kelly-Lowerey Ditch before being recharged with roughly 400 cfs of Wapatox water at the powerplant (both are upstream of the action area). During drought years, flows can become exceedingly low in the bypass reach, and stranding in the many side channels and braids becomes a distinct hazard for juvenile salmonids. Since 1994, the regulated and historical flows match up well, with moderately lower spring flows as runoff is retained in Rimrock for flip-flop, a somewhat lower seasonal low flow and a distinctly non-normative spike in September and October representing flip-flop releases. In low-flow years, however, such as the period 1982 – 1993, the reduction of the spring peak is much more pronounced as is the intensification of the seasonal low flow period (YSS 2001).

A particular concern affecting juvenile salmonids is that the relatively sudden and dramatic increase in flow during flip-flop might displace juveniles downstream, perhaps all the way into the much less hospitable lower Yakima River. At a minimum, the increases in flow associated with flip-flop can cause fish to vacate feeding territories and migrate to new areas, increasing competition and stress, reducing growth, and increasing the likelihood of mortality. An impact of this sort seems inevitable unless fish, necessarily concentrated in the center of the main channels by late August, can find and make use of protected side channels before becoming exhausted and moving downstream to find better habitat. If this occurs for subyearling

steelhead, the probable outcome is death, as it is unlikely that they could survive another entire year in the lower Yakima River.

A final flow-related problem concerns stranding in or exclusion from the side channels in the bypass reach. Data collected in 2000 determined that all side channels would be dewatered when flows were less than approximately 130 cfs, and that most would contain some water when flows were 630 cfs or greater (YSS 2001). Based on existing flow data for at least a short period during most years the side channels are evidently nearly or totally dewatered. Perhaps more troublesome are the number of years for which flows through early July are capable of at least filling some side channels, but then fall below the total dewatering level. When flows are "side channel competent," it is likely that fry and parr are recruiting to them. The impacts attributable to stranding are most likely directly related to the number of recruitment/stranding episodes per year, and the suddenness with which side channel competent flows are reduced.

Violations of state water quality standards for water temperature have been documented on the Naches River, which is listed on the Clean Water Act Section 303(d) impaired water quality list for pH, and temperature. In addition, water temperature excursions are documented for Gold Creek (tributary to upper Naches River), which is also on the 303(d) list. Of these water quality problems, the most significant is temperature. Elevated temperatures can be expected to present a significant problem during very low flow years when the entire flow of the stream is concentrated in a trickle in the center of the streambed, especially in the bypass reach.

For MCR steelhead, the Naches River in the Action Area is severely altered from historic conditions by development and flow management practices. Floodplain infrastructure and flow manipulation for irrigation needs provide discharge out of phase with the natural hydrograph that is spatially and temporally incompatible with salmonid, riparian, and hyporheic species' requirements.

2.1.3.1 Factors Affecting the Species at the Population Scale

In previous Opinions, NOAA Fisheries assessed life history, habitat and hydrology, hatchery influence, and population trends in analyzing the effects of underlying action on affected species at the population scale (see, for example, FCRPS, NMFS 2000). A thumbnail description of each of these factors for the MCR steelhead ESU is provided below.

Life History. Most fish in this ESU smolt at 2 years and spend 1 to 2 years in salt water before reentering freshwater, where they may remain up to a year before spawning (Howell *et al.* 1985). All steelhead upstream of The Dalles Dam are summer-run (Schreck *et al.* 1986, Reisenbichler *et al.* 1992, Chapman *et al.* 1994). The Klickitat River, however, produces both summer and winter steelhead, and age-2-ocean steelhead dominate the summer steelhead, whereas most other rivers in the region produce about equal numbers of both age 1- and 2-ocean fish. A nonanadromous form co-occurs with the anadromous form in this ESU; information suggests that the two forms may not be isolated reproductively, except where barriers are involved.

Habitat and Hydrology. Substantial habitat blockages are present in the geographic range of this ESU. In the Yakima Basin, Cle Elum, Rimrock, and Bumping Dams are examples of storage projects that have blocked many miles of formerly utilized habitats since the early 1900's. Water

withdrawals and irrigation uses have dramatically reduced summer flows and resulted in a "flip-flop" of the natural hydrograph. This is significant because high summer and low winter water temperatures are limiting factors for salmonids in many streams in this region (Bottom *et al.* 1985).

Hatchery Influence. Continued increases in the proportion of stray steelhead in the Deschutes River basin is a major concern. The Oregon Department of Fish and Wildlife and the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) estimate that 60% to 80% of the naturally spawning population consists of strays, which greatly outnumber naturally produced fish. Although the reproductive success of stray fish has not been evaluated, their numbers are so high that major genetic and ecological effects on natural populations are possible (Busby *et al.* 1999). The negative effects of any interbreeding between stray and native steelhead is intensified if the stray steelhead originated in geographically distant river basins, especially if the river basins are located in the geographic range of different ESUs. The populations of steelhead in the Deschutes River basin include the following:

- Steelhead native to the Deschutes River
- Hatchery steelhead from the Round Butte Hatchery on the Deschutes River
- Wild steelhead strays from other rivers in the Columbia River basin
- Hatchery steelhead strays from other Columbia River basin streams

Regarding the latter, CTWSRO reports preliminary findings from a tagging study by T. Bjornn and M. Jepson (University of Idaho) and NOAA Fisheries suggesting that a large fraction of the steelhead passing through Columbia River dams (*e.g.*, John Day and Lower Granite dams) have entered the Deschutes River and then returned to the mainstem Columbia River. A key unresolved question about the large number of strays in the Deschutes basin is how many stray fish remain in the basin and spawn naturally.

For the MCR steelhead ESU as a whole, NOAA Fisheries estimates that the median population growth rate (lambda) over the base period[2] ranges from 0.69 to 1.27, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (McClure *et al.* 2003). McClure *et al.* (2003) were unable to estimate the risk of absolute extinction for the MCR steelhead ESU because total spawner counts, age distributions of returning spawners, and estimates of the fraction of spawners that were wild-born in the time series were not available for all stocks. However, McClure *et al.* (2003) estimate that there is a 62% risk of a 90% decline in 50 years for the MCR steelhead ESU, and suggest that an 11% increase in population growth rate is necessary the reduce the 50-year risk of decline to below 5%.

2.1.3.2 Factors Affecting the Species with the Action Area

Section 4(a)(1) of the ESA and NOAA Fisheries listing regulations (50 CFR 424) set forth procedures for listing species. The Secretary of Commerce must determine, through the

[2] Estimates of median population growth rate, risk of extinction, and the likelihood of meeting recovery goals are based on population trends observed during a base period that varies between spawning aggregations. Population trends are projected under the assumption that all conditions will stay the same into the future.

regulatory process, if a species is endangered or threatened based upon any one or a combination of the following factors: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or human-made factors affecting its continued existence.

The proposed action includes activities that will have some level of effects with short-term effects from category (1) in the above paragraph, and the potential for long-term effects as described in category (5). The characterization of these effects and a conclusion relating the effects to the continued existence of MCR steelhead is provided below, in section 2.3.

The major factors affecting MCR steelhead within the action area include instream flows (timing, duration, and intensity), turbidity levels (high spring levels) channelization, inadequate passage, floodplain development and riparian habitat. NOAA Fisheries uses the Matrix of Pathways and Indicators (MPI), available online at http://www.nwr.noaa.gov/1habcon/habweb/pubs/matrix.pdf; (NMFS 1996b), to analyze and describe the effects of these factors on listed steelhead. As described above, the MPI relates the biological requirements of listed species to a suite of habitat variables. In the MPI analysis presented here, each factor is considered in terms of its effect on relevant pathways and associated indicators (*properly functioning, at risk, or not properly functioning*).

2.1.4 Relevance of Baseline to Status of Species

Typically, steelhead spawn earlier at lower, warmer elevations than higher, colder elevations. In the Naches as elsewhere in the basin, spawning begins earliest at the lowest elevations. From radio tagging data and records of the first observations of steelhead fry, steelhead spawn in the lower Naches (below Tieton) and its tributaries from early March through mid May. In the upper Naches, the spawning period is from late March through late May. In the higher elevation tributaries of the upper Naches (the Little Naches River, Bumping River, Rattlesnake Creek), spawning occurs from late April through late May, with peak in early May.

Steelhead that spawn later in the year at higher elevations in the Yakima Basin, face lethal conditions (in most years) as out-migrating kelts (spawned-out adults returning to the ocean) in the lower Yakima River. Steelhead that spawn in the Yakima Basin at lower elevations can face the same hazardous conditions, however earlier spawn timing and emigration may provide increased survival because kelts traverse the lower Yakima River before water quality becomes lethal. High temperatures, low flows, and degraded water quality from irrigation effluents (*i.e.*, high temperature, turbidity and pollutant concentrations), contribute to extremely low survival during summer months (Vaccaro 1986; Lichatowich and Mobrand 1995; Lichatowich *et al.* 1995; Pearsons *et al*. 1996; Lilga 1998). Because of upstream dam operations, MCR steelhead spawning and emergence timing is shifted to later in the year in the Upper Yakima, and out-migrating smolts therefore meet hazardous if not lethal water quality conditions in the lower Yakima River. Conditions in the lower Yakima River become suitable again for salmonids in early fall, near the end of the irrigation season (YSS 2001).

Juvenile steelhead use tributary and mainstem reaches throughout the Yakima Basin as rearing habitat, until they begin to smolt and migrate out of the subbasin. Downstream smolt migration

begins in November, peaking between mid-April and May. Busack *et al*. (1991) analyzed scale samples from smolts and adult steelhead and found, generally, that smoltification occurs after two years in the Yakima system, with a few fish maturing after three years and an even smaller proportion reaching the smolt stage after one year. When compared to spawning distribution and run timing, these data suggest that various life stages of listed steelhead are present in portions of the Yakima Basin and its tributaries virtually every day of the year.

The MCR steelhead, and other native fish stocks across the Columbia River Basin, have been negatively affected by a combination of habitat alteration and hatchery management practices. The four downstream, mainstem dams on the Columbia are perhaps the most significant source of habitat degradation for this ESU. The dams act as a partial barrier to passage, kill out-migrating smolts in their turbines, raise temperatures throughout the river system, and have created lentic refugia for salmonid predators. In addition, alteration in the structure and function of riverine systems has provided conditions that impair the physiology of salmonids and invigorate native and nonnative predators, severely truncate or remove natural spatial and temporal discharge characteristics tied to life-history requirements, and often dictate the long-term timing of immigration and emigration. Besides dams, irrigation systems have had a major negative impact by diverting large quantities of water, stranding and/or entraining fish, and acting as barriers to passage. Other major habitat degradation has occurred through urbanization (especially in alluvial floodplains) and livestock grazing practices (WDF *et al.* 1993; Busby *et al.* 1996; 1999; NMFS 1996a).

Habitat alterations and differential habitat availability (*e.g.*, daily or annually fluctuating discharge levels) limit the production of naturally spawning populations of salmon and steelhead. The National Research Council Committee on Protection and Management of Pacific Northwest Anadromous Salmonids identified habitat problems as a primary cause of declines in wild salmon runs. Some habitat impacts identified were the fragmentation and loss of available spawning and rearing habitat, migration delays, degradation of water quality, removal of riparian vegetation, decline of habitat complexity, alteration of streamflow and streambank and channel morphology, alteration of ambient stream water temperatures, sedimentation, and loss of spawning gravel, pool habitat and large woody debris (LWD) (NMFS 1996a; NRCC 1996; Bishop and Morgan 1996).

Hatchery management practices are suspected to be a major factor in the decline of this ESU. The genetic contribution of non-indigenous, hatchery stocks may have reduced the fitness of the locally adapted native fish through hybridization and associated reductions in genetic variation or introduction of deleterious (non-adapted) genes. Hatchery fish can also directly displace natural spawning populations, compete for food resources, or engage in agonistic interactions (Campton and Johnston 1985; Waples 1991; Hilborn 1992; NMFS 1996a).

2.2. Analysis of Effects

NOAA Fisheries' ESA implementing regulations define "effects of the action" as "the direct and indirect effects of an action on the species, together with the effects of other activities that are interrelated or interdependent with that action, will be added to the environmental baseline" (50 CFR 402.02).

In this analysis, the changes resulting from the proposed action are expressed in terms of whether they are likely to restore, maintain, or degrade an element of functional MCR steelhead habitat. By examining the effects of the proposed action on the habitat portion of a species' biological requirements, NOAA Fisheries can gauge how the action will affect the population variables that constitute a species' viability and, finally the effect of the action on the species (NMFS 1999).

The proposed action is likely to adversely affect MCR steelhead. The hydraulics of the Naches River flowing through the action area create poor spawning habitat conditions. However, suitable spawning habitat is located upstream and downstream of the action area. Therefore, the likelihood of redds in the action is considered small . The action area does provide access to rearing habitat for juvenile steelhead, and serves as a migratory corridor for steelhead moving between the Yakima River and spawning habitat in the Naches mainstem and tributary headwaters.

2.2.1 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 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 (USFWS and NMFS 1998).

The direct effects of the proposed action would result from activities related to the building of a new bridge, realignment of bridge approaches, demolition of an existing bridge, construction of an upland dike and stormwater retention ponds, obliteration of portions of the existing roadway and revegetation of all disturbed areas. The proposed project is estimated to take approximately 18 months to complete starting April 2005 and reaching completion by October 2006. The possible direct effects of these activities include: (1) disturbance from over-water noise and activity, including pile driving; (2) mortality from damage to downstream redds or possible crushing by falling debris; (3) sound pressure injury from pile driving; (4) turbidity; (5) contamination of waterbody from fuel or chemicals; (6) alteration of habitat through temporary loss of riparian trees; and (7) a slight increase in impervious surface and stormwater runoff.

Fish Disturbance is likely to result from noise and activity over the water, and within the OHWM during the construction and demolition period. Fish mortality is possible if debris from demolition falls directly into the water, if a pile is driven into or within a few feet of a redd, or if sediment generated by in-water work smothers downstream redds. The response of salmonids to noise or physical disturbance in their environment is varied. The common fright response of salmonids to sound is the "startle" or "start" behavior (Moore and Newman 1956; Burner and Moore 1962; VanDerwalker 1967). Such behaviors involve sudden bursts of swimming that are short in duration and distance traveled, usually less than 60 cm (Feist 1991). Occasionally, some fish will respond to a disturbance by attempting to hide in interstitial spaces of the stream bottom. When frightened fish move away from a disturbance, they often return to the area shortly after the disturbance ends.

Juveniles are likely to be in the action area or moving through the area at all times, possibly using the upstream off-channel areas for rearing and holding. By June 15, the earliest date for work below the OHWM in the first season, spawning is complete. Activity over the water will occur on a 4-day week, 10-hour day schedule, allowing some relative "undisturbed" time for fish to move through the area.

Mortality of incubating eggs is possible when piles are placed onto the river bottom and driven into the substrate. Although the likelihood of redds in the pile driving location is considered very low, , if redds are observed, pile spacing will be adjusted as much as possible to avoid direct contact. However, depending on the distance from the pile, the vibratory disturbance could dislodge or otherwise damage incubating eggs. In addition, injury or death could result if debris from the demolition falls into the water. During bridge demolition, at the very least, a chain link fence structure covered with filter fabric will be suspended below the bridge to catch any debris before it enters the water.

A recent report (YSS 2001) using an estimate of 1,300 temperature units for 50% emergence, known or assumed spawning dates, existing water temperature data, and field observations of newly emerged fry (fry 25-30 mm long), suggest that fry emergence probably occurs from June through mid-July in the lower Naches River. Therefore it is possible that some redds will still be in a vulnerable state during the first season when pile driving below the OHWM begins as early as June 15. Redds may be disturbed directly by pile placement or the vibrations associated with pile driving (additional information on pile driving impacts are described below).

During demolition of the existing bridge, a catchment structure will be placed below the bridge to catch any materials that may fall. Timing of work below the OHWM is designed to minimize disturbance to the maximum extent practicable. The YCPW needs a June 15 start date the first season or the work will require an additional summer to complete. To minimize the impacts to redds during the second season, work below the OHWM will not begin until July 15. In any case, any free-swimming fish present during work will be capable of moving away from the area to avoid the in-water work activities, thus preventing injury or death.

While over-water construction will continue year round, work within the OHWM will be limited to the period of June 15 to October 31 the first summer and July 15 to October 31 for pile extraction the second summer. The entire project will take approximately 18 months to complete (begin in spring 2005 and complete in the summer of 2006). Overall, the project is likely to cause some disruption of normal behavior patterns in the area. However, the area is already quite "active" with two bridges in the area supporting constant traffic, an irrigation diversion operating on the south bank, and a fish ladder that requires frequent cleaning on the north bank. When added to existing conditions, the proposed timing restrictions and BMP's are considered adequate to minimize the disturbance impact on fish.

Pile Driving/Impact Noise (information was taken from NMFS 2004). The potential for injury to fishes from pile driving depends on the type and intensity of the sounds produced. These are greatly influenced by a variety of factors, including the type of hammer, the type of substrate and the depth of the water. Firmer substrates require more energy to drive piles into, and produce more intense sound pressures. Steel piles are driven into the substrate using either impact hammers or vibratory hammers. Impact driving of steel piles can produce intense sound pressure

waves that can injure and kill fishes (e.g., Longmuir and Lively 2001; Stotz and Colby 2001; Stadler, pers. obs. 2002). The injuries caused by such pressure waves are known as barotraumas, and include hemorrhage and rupture of internal organs, including the swimbladder and kidneys in fish, and damage to the auditory system. Vibratory hammers produce lower peak pressures than impact hammers (Nedwell and Edwards 2002). While pressures produced from vibratory hammers are still slightly above the threshold for physical injury (180 dBpeak), no fish-kills have been linked to the use of vibratory hammers. The lack of evidence does not mean that vibratory hammers are harmless, but they are, clearly, less harmful than impact hammers. The first season incubating eggs and alevins downstream of the pile driving could be vulnerable to noise and sediment affects. may still be in the action area when pile driving begins. The second season, removal of piles will not begin until after July 15 to ensure fry have emerged from redds in the area, and the juvenile fish therefore able to avoid the area.

Work below the OHWM needs to begin in mid-June the first season or an extra year would be required to complete the project. The probability of redds in the immediate area during pile driving is considered small and the potential impact from starting work below the OHWM in mid-June the first year is considered to be less than would occur from extending the construction period an additional season (Anderson 2004). To minimize the potential risk to redds, juvenile, and adult MCR steelhead, the YCPW has agreed to a number of conservation measures including: (1) using a vibratory hammer for all pile driving below the OHWM; (2) only using an impact hammer to test the load bearing capacity of a small subset of piles outside the wetted perimeter of the stream; (2) restricting work below the OHWM to June 15 through October 31 the first season and July 15 to October 31 the second season when the number of fish likely to be in the area is reduced. Therefore, although pile driving can injure or kill fish, NOAA Fisheries does not expect this action to cause significant injury or mortality, based on the mitigation measures noted above and the low likelihood redds will occur in the vicinity of pile driving and removal.

Water Quality: Suspended Sediment and Turbidity from pile driving and extraction, bridge demolition, removing riparian trees, actions associated with the temporary work platforms and constructing the south intermediate pier, can smother redds and increase local and downstream turbidity levels. In the immediate vicinity of the construction activities (several hundred feet), turbidity will likely exceed the natural background levels temporarily and potentially affect listed MCR steelhead.

Quantifying turbidity levels, and their effect on fish species is complicated by several factors. First, turbidity from an activity will typically decrease as distance from the activity increases. How quickly turbidity levels attenuate depends on the quantity of material in suspension (*e.g.*, mass or volume), particle size, the amount and velocity of ambient water (dilution factor), and the physical/chemical properties of the sediments. Second, the impact of turbidity on fish is not only related to the turbidity levels, but also the particle size of the suspended sediments.

For salmonids, turbidity has been linked to a number of behavioral and physiological responses (i.e., gill flaring, coughing, avoidance, increase in blood sugar levels) which indicate some level of stress (Bisson and Bilby 1982; Sigler *et al.* 1984; Berg and Northcote 1985; Servizi and Martens 1992). The magnitude of these stress responses is generally higher when turbidity is increased and particle size decreased (Bisson and Bilby 1982; Servizi and Martens 1987; Gregory and Northcote 1993). Although turbidity may cause stress, Gregory and Northcote (1993) have

shown that moderate levels of turbidity accelerate foraging rates among juvenile chinook salmon, likely because of reduced vulnerability to predators (camouflaging effect). When the particles causing turbidity settle out of the water column, they contribute to sediment on the riverbed (sedimentation), which may negatively affect salmon: (1) buried salmonid eggs will be smothered and suffocated, (2) prey habitat may be displaced, and (3) future spawning habitat may be degraded (Spence *et al.* 1996). In addition, turbidity and subsequent sedimentation can affect the quality of stream substratum as spawning material, influence the exchange of streamflow and shallow alluvial groundwater, occupy channel storage areas for cobbles and gravels, increase width-depth ratios, depress riverine productivity, and contribute to decreased salmonid growth rates (Waters 1995; Newcombe and Jensen 1996; Shaw and Richardson 2001).

Increased turbidity will likely be short-lived and have low potential for harming free-swimming fish that are able to move away and avoid the affect. However, during the first season of work below the OHWM, it is possible that vulnerable MCR steelhead redds in the immediate area could experience sedimentation that can smother and kill the incubating eggs. The project includes measures to minimize turbidity impacts. For instance, work below the OHWM in the first summer will only take place between June 15 and October 31 and in the second summer will only occur between July 15 and October 15. Work below the OHWM will be limited, to the maximum extent practicable, to occur when free-swimming life stages of steelhead that may be present are able to avoid the disturbance. Turbidity caused by this action is expected to be of short duration and return to background levels soon after construction is over, and long-term effects (*i.e.*, loss of or adverse impact to habitat) will not occur. Other than the short-term input mentioned above, this project will not add increase turbidity or sedimentation levels over the baseline condition within the Action Area.

Chemicals (including fuel) are used during the construction process and accidental release of fuel, oil, and other contaminants may occur. Those contaminants could injure or kill aquatic organisms if spilled into a water body or the adjacent riparian zone. However, all equipment fueling and maintenance would occur in designated staging areas away from any water body or wetland, making it unlikely that a chemical spill large enough to result in take would occur.

Riparian habitat and LWD will experience a decrease in structure and function caused by removing or degrading streambank and upland vegetation. The loss of vegetation may affect riparian habitat functions including shading and organic matter inputs to the stream. Removing three trees from the riparian area will temporarily reduce riparian function. However, this minor loss of function is considered to be insignificant at the reach scale and will be further reduced in the long term because the YCPW will replant trees at a rate of three to one. Future large wood recruitment is not expected to be significantly affected by the proposed work. Placing 100 cubic yards of riprap above the OHWM to protect the south abutment will permanently alter roughly 666 square yards of area beneath the new bridge. The riparian habitat and bank areas disturbed by the project will be revegetated with native grass seed, planted willows, shrubs, and trees to stabilize soils and promote site recovery. The negative effects of these activities on MCR steelhead and aquatic habitat indicators will be limited by implementing construction methods included in the project design, and BMPs. The environmental baseline the action area is considered "properly functioning" for LWD, and this status will be maintained, based on NOAA Fisheries criteria (NMFS 1996b).

Impervious surface in the area from roads and urban development currently channels runoff into roadside ditches and culverts which then empty into the river. The addition of 0.85 acres of new impervious surface will slightly increase the amount of stormwater runoff in the action area. However, the construction of stormwater retention ponds will slightly improve local conditions by treating 140% of expected runoff and improving the quality of runoff water before it enters the river.

2.2.2 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 section 7 consultation but will result from the action under consideration. These actions must be reasonably certain to occur, or be a logical extension of the proposed action.

Based on the information provided, NOAA Fisheries does not anticipate any indirect effects to fish or fish habitat to result from this project.

2.2.3 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 Federal action subject to consultation" (50 CFR 402.02). Future Federal actions that are unrelated to the proposed actions are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

In the action area for this project, urban development and agricultural activities are the main land use. Riparian buffers are limited in structure and function by floodplain development and alteration of the natural hydrograph. Although land use practices that would result in the take of endangered species are prohibited by section 9 of the ESA, such actions do occur. NOAA Fisheries cannot conclude with certainty that any particular riparian habitat will be modified to such an extent that take will occur. Riparian habitat is essential to salmonids in providing and maintaining various stream characteristics such as; channel stabilization and morphology, leaf litter, and shade. However, given the patterns of riparian development in the action area and rapid human population growth of Yakima County, it is reasonably certain that some additional riparian habitat will be impacted in the future by non-Federal activities.

2.2.4 Summary of Effects

As detailed in section 2.1.3.1, NOAA Fisheries has estimated the median population growth rate (lambda) for MCR steelhead affected by the West Powerhouse Road Bridge replacement project. For the MCR ESU, life history diversity has been limited by the influence of hatchery fish, by alteration of the timing and intensity of flows, by physical barriers that prevent migration to historical spawning and/or rearing areas, and by water temperature barriers that influence the timing of emergence, juvenile growth rates, or the timing of upstream or downstream migration. In addition, hydropower development has profoundly altered the riverine environment and those habitats vital to the survival and recovery of the MCR ESU.

The replacement of the West Powerhouse Road Bridge will result in short-term deleterious effects on listed MCR steelhead from mobilized sediment and altered riparian vegetation. Conservation measures and BMPs are expected to reduce the potential for harm to listed fish from increased turbidity, and streambed or bank disturbance.

2.3 Conclusions

NOAA Fisheries has reviewed the direct and indirect effects of the proposed action, together with anticipated cumulative effects on MCR steelhead and their habitat. NOAA Fisheries evaluated these effects in light of existing conditions in the action area, and measures included in the action to minimize effects. The proposed action is likely to cause short-term negative effects to water quality (turbidity, suspended sediment), and temporarily decrease the structure and function of riparian habitat. Pile driving may injure or kill fish and incubating eggs; however, the best available information (Anderson 2004) indicates there is a low likelihood that steelhead redds will be present in the vicinity of that activity. The overall effect is no significant change in habitat quantity and quality in the Action Area. These effects are expected to maintain salmonid distribution, reproduction and numbers. Therefore, the proposed action is not likely to jeopardize the continued existence of MCR steelhead.

2.4 Reinitiation of Consultation

This concludes formal consultation for replacement of the West Powerhouse Road Bridge and realignment of the bridge approaches in Yakima County, Washington. As provided in 50 CFR 402.16, reinitiation of formal consultation is required 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 4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending conclusion of the reinitiated consultation. Upon reinitiation, the protection provided by this incidental take statement, section 7(o)(2), becomes invalid.

2.5 Incidental Take Statement

The ESA at section 9 (16 U.S.C. 1538) prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule (50 CFR 223.203). Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. 1532(19)). Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering" (50 CFR 222.102). Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering" (50 CFR 17.3). Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the

Federal agency or applicant" (50 CFR 402.02). The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement (16 U.S.C. 1536).

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures (RPMs) that are necessary to minimize impacts and sets forth terms and conditions with which the action agency, the applicant, or both, must comply in order for the exemption of take to be valid.

2.5.1 Amount or Extent of Take

As stated in section 2.1.2 above, MCR steelhead use the action area for migration, rearing and spawning. Juvenile MCR steelhead are likely to be present in the action area any day of the year, and a small number of adults may be in the area during the proposed work window. During the first work season, there is a small but discountable possibility redds with eggs and pre-emergent juveniles will be present during pile driving. Overall, incidental take of MCR steelhead is reasonably certain to occur from the construction elements of the proposed action. The proposed action includes measures to reduce the likelihood and amount of incidental take. Some elements of the proposed action are necessary to minimize the impact of such incidental taking, and so are included as RPMs.

In-water work has the potential to cause take in the form of injury or death. Take caused by the project is also likely in the form of harm, where habitat disturbance and modifications will temporarily interfere with normal behavior patterns of MCR steelhead, to the degree that it injures fish. Harm is most likely to result from turbidity or sedimentation, and temporary loss of functional riparian habitat. The amount of take from these causes is impossible to estimate, because in anadromous species, the numbers of fish that may be present is highly variable over time, and is also not directly proportional to habitat condition.

In instances where the number of individual animals to be taken cannot be reasonably estimated, NOAA Fisheries uses a surrogate approach to estimate extent. The surrogate should provide an obvious threshold of authorized take which, if exceeded, provides a basis for reinitiating consultation. In this case, NOAA Fisheries will use a habitat surrogate to measure the extent of take.

This Opinion includes an analysis if the extent of effects to MCR steelhead from noise, activity over- and in-water, work below the OHWM including substrate disturbance from pile driving, pile removal and pier construction, turbidity, removal of three mature trees along the streambank and disturbance of approximately 1,400 linear feet of streambank (700 feet along each side). The effects of removing the three mature trees and disturbing 1,400 linear feet of streambank will be minimized by: (1) replanting native trees at a rate of three to one; (2) revegetation of all disturbed areas with native trees, shrubs and grasses; and (3) protection of exposed soils during the construction period until revegetation is completed.

The take exempted in this incidental take statement is that number of fish that would be, harmed, killed, or injured by over- and in-water work associated with removing one bridge, building a replacement bridge, constructing an upland dike to protect the bridge, and realignment of the

bridge approaches. The exempt take is limited to that which would occur up to the downstream extent of habitat degradation caused by turbidity or sedimentation, up to 300 feet from the point of disturbance per the August 4, 1998 DOE and WSDOT Implementing Agreement regarding compliance with the state of Washington Surface Water Quality Standards (WAC 173-201A). Incidental take is exempted for a decrease of riparian habitat structure and function from removal of three mature riparian trees and placement of 100 cubic yards of riprap above the OHWM (will cover 667 square yards on the south bank). In addition, incidental take is expected to be caused by habitat disturbance during placement and removal of 80 temporary piles (18 or 24-inch diameter each) to support two 6,400 square-foot work platforms, and the permanent placement of a 10-foot diameter pier within the OHWM. Should the amount of over- or in-water work, or upland disturbance, exceed any of the described thresholds, or minimization or mitigation measures fail to be implemented as detailed in the project description, the extent or type of harm could be exceeded, and the reinitiation provisions of this Opinion apply.

2.5.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. NOAA Fisheries has the continuing duty to regulate the activities covered in this incidental take statement. If NOAA Fisheries fails to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

NOAA Fisheries believes that the following RPMs, along with conservation measures described in the BA, are necessary and appropriate to minimize the take of ESA-listed fish resulting from implementation of this Opinion.

1. The FHWA will minimize take in the form of harm caused by staging and onshore construction activities.

2. The FHWA will minimize take caused by construction activities that occur over-water or below the OHWM

3. The FHWA will minimize take in the form of harm, caused by vegetation removal.

4. The FHWA will minimize take in the form of injury or death caused by in-water work.

2.5.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the action must be implemented in compliance with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. Implement RPM No. 1 by incorporating best management practices (BMPs) to reduce potential impacts of and ensuring the following:

a. A Temporary Erosion and Sediment Control (TESC) plan will be implemented.

b. A Spill Prevention, Control, and Containment (SPCC) plan will be implemented.

c. Hydraulic fluid in heavy equipment that will operate over the water or below the OHWM will be replaced with mineral oil or other biodegradable, non-toxic hydraulic fluid.

d. All heavy equipment will be clean and free of external oil, fuel, or other potential pollutants.

e. The FHWA will follow all conservation measures and BMPs as described in Section eight of the BA.

2. Implement RPM No. 2 by incorporating BMPs ensuring the following:

a. To the maximum extent practicable, equipment will work from on-shore (or constructed) work areas.

b. The construction manager will administer the TESC Plan and the SPCC plan.

c. Riprap used for protection of the south abutment will be clean, the minimum size possible and will be "placed" not dumped.

d. Areas along the south bank of the river below the OHWM between the new bridge and the irrigation diversions will be planted with species capable of rapid regeneration (*e.g*. willow fascines)

3. Implement RPM No. 3 by ensuring development of functional riparian and upland vegetation, as follows:

a. Replacement of trees will be conducted at a ratio of three to one for each species lost. Revegetation of upland areas will include native trees, shrubs and grasses.

b. All plantings will use native species appropriate for riparian or upland use and will be planted by hand tools or non-invasive mechanical methods.

c. All riparian plantings and plantings that are identified as replacement trees required under item 3a, will be monitored for at least five years to ensure 80% survival; replanting will occur if survival rates are less than 80%.

d. Each year for two years, a monitoring report detailing planting locations, methods, composition, and survival will be submitted to:

NMFS-WSHO
Ellensburg Field Office

Attn: Diane Driscoll
304 South Water St., Ste. 201
Ellensburg, Washington 98926

4. Implement RPM No. 4 by incorporating appropriate timing restrictions during project construction, as follows:

   a. Work below the OHWM of the Naches River will be done the first season only between June 15 and October 31 and the second season between July 15 through October 15.

All terms and conditions will be included in any permit, grant, or contract issued to the implementation of the action described in this Opinion.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Statutory Requirements

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

Pursuant to the MSA:

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

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that may adversely affect EFH (section 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 NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

According to the MSA (section 3), EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (e.g.,

contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), site-specific, or habitat-wide impacts: including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

Consultation with NOAA Fisheries is required for 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 may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of Essential Fish Habitat

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 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho salmon.

3.4 Effects of Proposed Action on Essential Fish Habitat

The effects on chinook and coho salmon are essentially the same as those for ESA listed steelhead and are described in detail in Section 2.2.1 of this document. The proposed action may result in short- and long-term adverse effects on a variety of habitat parameters. These adverse effects are:

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

2. Temporary loss in riparian structure and function because of tree removal and bank disturbance.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook and coho salmon.

3.6 Essential Fish Habitat Conservation Recommendations

Pursuant to Section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the FHWA, it does not believe that these measures are sufficient to address the adverse impacts to EFH described above. To minimize the adverse effects to designated EFH for chinook and coho, NOAA Fisheries recommends that the FHWA ensure implementation of the following measures:

1) To the maximum extent practicable, equipment will work from on-shore (or constructed) work areas.

2) The construction manager will administer the TESC Plan and the SPCC plan.

3) Riprap used for protection of the south abutment will be clean, the minimum size possible and will be "placed" not dumped.

4) Areas of riprap (south bridge abutment) will be backfilled with soil and planted with species capable of rapid regeneration (*e.g*. willow fascines).

5) Replacement of trees will be conducted at a ratio of three to one for each species lost. Revegetation of upland areas will include native trees, shrubs and grasses.

6) All plantings will use native species appropriate for riparian or upland use and will be planted by hand tools or non-invasive mechanical methods.

7) All plantings will be monitored for at least five years to ensure 80% survival; replanting will occur if survival rates are less than 80%. Each year for two years, a monitoring report detailing planting locations, methods, composition, and survival will be submitted to:

   NMFS-WSHO
   Ellensburg Field Office
   Attn: Diane Driscoll
   304 South Water St., Ste. 201
   Ellensburg, Washington 98926

8) Work below the OHWM of the Naches River will be done the first season only between June 15 and October 31 and the second season between July 15 through October 15.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 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 action agency must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

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