UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
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Seattle, WA 98115-0070

NMFS Tracking
No.: 2004/00115

April 23, 2004

Glenn M. Hoffman
District Ranger
United States Department of Agriculture
Forest Service
Lake Wenatchee and Leavenworth Ranger Districts
600 Sherbourne
Leavenworth, Washington 98826

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the White River Road Relocation and Bank Stabilization Project, Chelan County, Washington (HUC 170200110102, Napeequa River).

Dear Mr. Hoffman:

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 White River Road Relocation and Bank Stabilization Project, Chelan County, Washington. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Upper Columbia River Spring-run (UCRS) chinook salmon (*Oncorhynchus tshawytscha*) and/or Upper Columbia River (UCR) steelhead (*O. 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 also 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 Justin Yeager of the Washington State Habitat Office at (509) 925-2618 or email at justin.yeager@noaa.gov.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

cc: Cindy Raekes, USDA FS

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

White River Road Relocation and Bank Stabilization Project
Upper Columbia River Spring-run Chinook
Upper Columbia River Steelhead
Sixth Field HUC Napeequa River - 170200110102
Chelan County, Washington

Lead Action Agency:	United States Department of Agriculture Forest Service
Consultation Conducted By:	National Marine Fisheries Service Northwest Region
Date Issued:	April 23, 2004
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
NMFS Tracking No.:	2004/00115

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1.0 INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544), 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's National Marine Fisheries Service (NOAA Fisheries) and the 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. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations 50 CFR 402.

The analysis also fulfills the Essential Fish Habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) as amended (16 U.S.C. 1801 *et seq.*). The MSA established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries 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 and Consultation History

On January 26, 2004, NOAA Fisheries received from the Forest Service a draft biological assessment (BA) for the White River road relocation and bank stabilization project. A level 1 meeting was held on February 2, 2004, to review this draft. On February 6, 2004, NOAA Fisheries received a final BA and EFH assessment and formal consultation was initiated at that time. The consultation also included telephone conversations and emails between NOAA Fisheries staff and the Forest Service that are included in the administrative record. The administrative record for this consultation is on file at NOAA Fisheries, Washington State Habitat Office in Lacey, Washington.

1.2 Proposed Action

Proposed actions are defined in the Services' 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." Additionally, U.S. Code (16 U.S.C. 1855(b)(2)) further defines a Federal action as "any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency." Because the Forest Service proposes to fund and construct the project and this action may affect listed resources, it must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

The proposed action consists of two projects, the first is a road relocation and the second is streambank stabilization. The goal of the proposed action is to provide long-term protection of the road without negatively affecting habitat conditions for fish and wildlife, or the aesthetic nature of the White River, located in Chelan County, Washington.

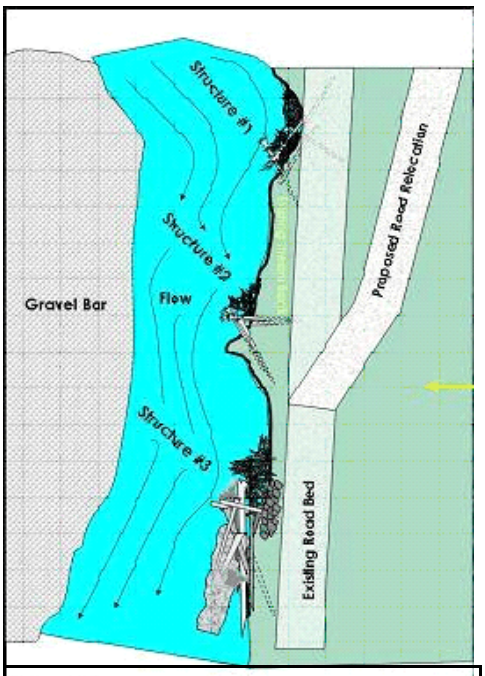
1.2.1 Road Relocation

Relocating the road will require constructing a 320-foot by 16-foot segment of new road, to take place over a two to three day period in early July 2004. The Forest Service will remove vegetation, grade the new road bed, and place gravel. The final grade will consist of a 6-inch depth of crushed rock with a 14-foot finished road width.

1.2.2 Bank Stabilization

The bank stabilization project is intended to accomplish three objectives: to help dissipate the increases in stream power associated with hydraulic convergence; to allow riparian vegetation to re-establish and mature; and, to initiate hydraulic cross-over and convey stream power downstream to the right bank. The Forest Service will place three log and rock structures in the bank near Forest Service Road 6400 (see Figure 1). Bank stabilization is scheduled to begin immediately after the road relocation is completed, in early July. However, depending on snow pack and runoff in the White River, construction may be delayed until conditions are favorable, which may extend the operating window into August. Each structure will take approximately four days to complete.

A tracked excavator will work from the existing Forest Service Road 6400 and excavate trenches into the road fill/streambank to anchor the trees. Trenches will be excavated back away from the streambank beginning approximately five feet from the bank down to the bed elevation. All logs, root wads, and slash will be placed prior to excavating the remaining 5 feet of bank, which, when excavated will allow the log jam feature to drop into place. Once the structures are completed, the abandoned segment of Road 6400 will be de-compacted with an excavator to a depth of 3 feet to restore water infiltration and provide a suitable planting bed. Slash from the new road construction will be spread across the de-compacted surface to provide micro sites for riparian vegetation.



Bair, 2003
Figure 1. White River bank stabilization structure map.

1.2.3 Conservation Measures

The Forest Service will minimize adverse effects to listed fish by:

1. Completing project activities by August 15, 2004, prior to spring chinook spawning, when redds are not present, and when natural background turbidity is high due to snowmelt runoff.

2. Conducting the majority (90%) of excavation away from flowing water.

3. Designing new road surfaces to allow runoff to drain onto vegetated areas, to trap sediment before it enters the White River.

4. Surfacing the new road segment with crushed rock to maintain surface drainage and to maintain stability and erosion-resistance.

5. Constructing the road construction in dry weather to reduce sediment delivery to the White River. If unseasonable wet weather is experienced, work may need to be halted if erosion cannot be adequately controlled during construction.

6. Locating re-fueling and fuel storage areas outside of Riparian Reserves or on a road, away from water drainage areas, where the largest possible spill can be contained before entering water.

7. Ensuring that all equipment will be free from leaking fuel, oil, hydraulic fluid, and other external petroleum based products. Equipment operators will be required to have a hazardous material spill kit at the project site at all times. There will be a daily maintenance check of all equipment.

8. If available, using equipment that can utilize vegetable based hydraulic products during construction activities.

1.2.4 Monitoring Program

1. The Forest Service will monitor project sites with photo points to determine channel changes and structure stability over time.

2. The Forest Service will monitor riparian vegetation condition following project implementation to measure revegetation of the abandoned road segment.

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 action area affected by the proposed action begins 300 feet past the eastern most part of the road relocation boundary and extends 2,000 feet downstream to the confluence of the Napeequa River. This area serves as a spawning, rearing, and migratory corridor for juvenile and adult Upper Columbia River (UCR) steelhead and Upper Columbia River Spring-run (UCRS) chinook listed in Table 1. It also serves as EFH for chinook and coho salmon.

2.0 ENDANGERED SPECIES ACT - BIOLOGICAL OPINION

The objective of this Opinion is to determine whether the White River road relocation and bank stabilization project, when added to the effects of the baseline, is likely to jeopardize the continued existence of UCRS chinook (*Oncorhynchus tshawytscha*) and/or UCR steelhead (*O. mykiss*). Because critical habitat is not designated for these species, the analysis for destruction or adverse modification critical habitat is not presented.

2.1 Evaluating the Effects of the Proposed Action

The prohibition of jeopardy is set forth in section 7(a)(2) of the ESA. The standard for determining jeopardy is found at 50 CFR 404.02. In conducting a jeopardy analysis under section 7 of the ESA, NOAA Fisheries uses the following steps: (1) consider the biological requirements and status of the listed species; (2) evaluate the relevance of the environmental baseline to the species' current status; (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with any available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery when the effects of the proposed or continuing action are added to the effects of the environmental baseline, along with any cumulative effects. The analysis must consider measures for survival and recovery specific to other life stages. If jeopardy is found, NOAA Fisheries must identify reasonable and prudent alternatives for the action that avoid jeopardy, if any.

The jeopardy analysis requires focus on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (*i.e.*, effects on habitat) as well as focus on the species itself. The analysis describes the action's effects on individual fish, populations, or both, and places those effects in the context of the ESU as a whole.

2.1.1 Biological Requirements

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) is to define the biological requirements of the to the listed ESUs affected by the action. Biological requirements for those conditions necessary for the listed ESUs to survive and recover to such naturally-reproducing population sizes that protection under the ESA would become unnecessary. To be delisted, species or ESUs populations must have the following attributes: sufficient numbers and distribution to maintain genetic diversity and heterogeneity, the ability to adapt to and survive environmental variation, and spatial and structural diversity suffcient to ensure long-term, self-sustaining persistence in the natural environment.

The UCRS chinook and UCR steelhead share similar basic biological requirements. These requirements include sufficient food, adequate 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 requirements affected by the proposed action include water quality, food, and unimpeded migratory access.

2.1.2 Status and Generalized Life History of Listed Species

Next, NOAA Fisheries considers the current status of the listed species, taking into account population size, trends, distribution, and genetic diversity, starting with the determinations made in its decision to list the species. NOAA Fisheries also considers any new data that are relevant to the species' status.

The Forest Service found that the White River road relocation and bank stabilization project is likely to adversely affect the ESA-listed species identified in Table 1, based on the life history characteristics of these ESUs.

Table 1. References for additional background on listing status, critical habitat designation, protective regulations, and life history for the ESA-listed and candidate species considered in this consultation.

Species	Listing Status	Critical Habitat	Protective Regulations	Biological Information
Upper Columbia River spring-run chinook salmon	March 24, 1999; 64 FR 14308, Endangered	Not Designated[1]	July 10, 2000; 65 FR 42422	Myers *et al.*1998; Healey 1991
Upper Columbia River steelhead	August 18, 1997; 62 FR 43937, Endangered	Not Designated	July 10, 2000; 65 FR 42422	Busby *et al.*1995; 1996

2.1.2.1 Upper Columbia River Spring-run Chinook

The UCRS chinook salmon ESU, listed as endangered on March 24, 1999 (64 FR 14308), includes all natural-origin, stream-type chinook salmon from river reaches above Rock Island Dam and downstream of Chief Joseph Dam, including the Wenatchee, Entiat, and Methow River basins. All chinook in the Okanogan River are ocean-type and are considered part of the UCR summer- and fall-run ESU. The spring-run components of the following hatchery stocks are also listed: Chiwawa, Methow, Twisp, Chewuch, and White rivers and Nason Creek.

Geographic Boundaries and Spatial Distribution.

The UCRS chinook rear and may spawn in the action area and are present during their smolt and adult migrations. UCRS chinook spawn and rear in the White River from the mouth up to the barrier falls at river mile 14.3. The principle spawning area is between Sears Creek (river mile 6.4) and the barrier falls. Critical habitat is not currently designated for UCRS chinook, though a designation may be forthcoming (see footnote 1).

[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.

Life History (including Ocean).

The UCRS chinook salmon exhibit classic stream-type life-history strategies: emigrating from freshwater as yearling smolts and undertaking extensive offshore ocean migrations. The majority of these fish mature at four years of age and return to the Columbia River from March through mid-May.

Population Trends and Risks.

On April 4, 2002, NOAA Fisheries defined interim abundance recovery targets for each spawning aggregation in this ESU. These numbers are intended to be an interim surrogate for the number and productivity of naturally produced spawners that may be needed for recovery, in the context of whatever take or mortality is occurring. They should not be considered in isolation, as they represent the numbers that, taken together, may be needed for the population to be self-sustaining in its natural ecosystem. For UCRS chinook salmon, the interim recovery levels are 3,750 spawners in the Wenatchee River, 500 spawners in the Entiat River, and 2,000 spawners in the Methow River.

All three of the existing UCRS chinook populations have exhibited similar trends and patterns in abundance over the past 40 years. The 1998 status review (Myers *et al.* 1998) reported that long-term trends in abundance were generally negative, ranging from minus 5% to plus 1%. Analyses of the data series, updated to include 1996-2001 returns, indicate that those trends have continued. Based on redd count data series, spawning escapements for the Wenatchee, Entiat, and Methow rivers have declined an average of 5.6%, 4.8%, and 6.3% per year, respectively, since 1958. In the most recent 5-year geometric mean (1997-2001), spawning escapements were 273 for the Wenatchee population, 65 for the Entiat population, and 282 for the Methow population, only 8% to 15% of the interim abundance recovery targets, although escapement increased substantially in 2000 and 2001 in all three river systems. Based on 1980-2000 returns, the average annual growth rate for this ESU is estimated as 0.85 (a growth rate of less than 1.0 is non-viable). Assuming that population growth rates were to continue at 1980-2000 levels, UCRS chinook salmon populations are projected to have very high probabilities of decline within 50 years (87% to 100%), and is likely to go extinct.

2.1.2.2 Upper Columbia River Steelhead

The UCR steelhead ESU, listed as endangered on August 18, 1997 (62 FR 43937), includes all natural-origin populations of steelhead in the Columbia River basin upstream from the Yakima River in Washington, to the U.S./Canada border. The Wells Hatchery stock is included among the listed populations.

Geographic Boundaries and Spatial Distribution.

The UCR steelhead ESU includes all naturally spawned populations of steelhead (and their progeny) in streams adjacent to the mainstem Columbia River upstream of the confluence of the

Yakima River to the tailrace of Chief Joseph Dam. NOAA Fisheries has initially identified three important spawning populations within this ESU: the Wenatchee, Entiat, and Methow populations (Interior Technical Recovery Team 2003). In the White River adult and juvenile steelhead are found from the mouth to the barrier falls at river mile 14.3. Spawning and rearing habitat exists in the White River subwatershed, and in 2003 the Washington State Department of Fish and Wildlife (WDFW) located one redd in the mainstem White River and two redds in the Napeequa River (Tonseth and Viola 2003). Critical habitat is not presently designated for UCR steelhead, although a designation may be forthcoming (see footnote 1).

Life History.

Life history characteristics for UCR steelhead are similar to those of other inland steelhead ESUs; however, smolt age is dominated by 2- and 3-year-olds and some of the oldest smolt ages for steelhead, up to 7 years, are reported from this ESU (Peven 1990). Based on limited data, steelhead from the Wenatchee and Entiat rivers return to freshwater after one year in salt water, whereas Methow River steelhead primarily return after two years in salt water. Similar to other inland Columbia River basin steelhead ESUs, adults typically return to the Columbia River between May and October and are considered summer-run steelhead. Adults may remain in freshwater up to a year before spawning. Unlike chinook salmon or sockeye salmon, a fraction of steelhead adults attempt to migrate back to the ocean. These fish are known as kelts, and those that survive will migrate from the ocean to their natal stream to spawn again.

Population Trends and Risks.

On April 4, 2002, NOAA Fisheries released interim abundance targets for spawning populations that comprise this ESU and a composite productivity objective for the ESU (Lohn 2002). The productivity target is a geometric mean natural return rate of 1.0 or greater over a sufficient length of time to ensure survival and recovery of the ESU. The interim abundance targets are 2,500 natural spawners in the Wenatchee Subbasin, 500 spawners in the Entiat Subbasin, and 2,500 Spawners in the Methow Subbasin. NOAA Fisheries developed these interim targets to help subbasin and recovery planners understand the approximate scale of improvement that will likely be needed to recover this ESU. NOAA Fisheries expects that these targets will change as better information is developed through these planning efforts.

Returns of both hatchery and naturally produced steelhead to the Upper Columbia River have increased in recent years. The average 1997-2001 return counted through the Priest Rapids fish ladder was approximately 12,900 fish. The average for the previous five years (1992-1996) was 7,800 fish. Abundance estimates of returning naturally produced UCR steelhead have been based on extrapolations from mainstem dam counts and associated sampling information (*e.g.*, hatchery/wild fraction, age composition). The natural component of the annual steelhead run over Priest Rapids Dam increased from an average of 1,040 (1992-1996), representing about 10% of the total adult count, to 2,200 (1997-2001), representing about 17% of the adult count during this period of time (West Coast Salmon BRT 2003).

In terms of natural production, recent population abundances for both the Wenatchee and Entiat aggregate population and the Methow population remain well below the interim recovery levels developed for these populations (West Coast Salmon BRT 2003). A 5-year geometric mean (1997-2001) of approximately 900 naturally produced steelhead returned to the Wenatchee and Entiat rivers (combined) compared to a combined abundance target of 3,000 fish. Although this is well below the interim recovery target, it represents an improvement over the past (an increasing trend of 3.4% per year). However, the average percentage of natural fish for the recent 5-year period dropped from 35% to 29%, compared to the previous status review. For the Methow population, the 5-year geometric mean of natural returns over Wells Dam was 358. Although this is well below the interim recovery target, it is an improvement over the recent past (an increasing trend of 5.9% per year). In addition, the estimated 2001 return (1,380 naturally produced spawners) was the highest single annual return in the 25-year data series. However, the average percentage of wild origin spawners dropped from 19% for the period prior to the 1998 status review to 9% for the 1997 to 2001 returns.

2.1.3 Environmental Baseline

The environmental baseline is defined as "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). NOAA Fisheries' evaluates the relevance of the environmental baseline to the species' current status. In describing the environmental baseline, NOAA Fisheries evaluates the condition of essential features of critical habitat, if designated, and its ability to support the listed ESUs.

Project Location and Habitat Description.

The project area exists within the White River drainage near Lake Wenatchee on the Okanogan-Wenatchee National Forest. The White River is a 150 square mile glacial watershed draining into Lake Wenatchee. The project site is located in T27N, R16E, section 18 on private land owned by Tall Timber Ranch Corporation, just upstream of the confluence with the Napeequa River. The Forest Service has obtained a right-of-way easement from the Tall Timber Ranch that encompasses the project area for construction and maintenance.

The project site soils are alluvial deposits from both the White and Napeequa rivers occurring on a low gradient and sinuous glacial valley segment with dense red-osier dogwood vegetation. The floodplain and streambank are composed of fine alluvium that is highly erodible when not protected by vegetation or other debris. The bankfull channel width in this area is greater than 105 feet with an elevation or approximately 1,980 feet. Annual precipitation averages 80 to 90 inches, most of which falls during the cooler months (October to April) as snow.

Historical Information.

The construction of Grand Coulee Dam (completed in 1942) blocked anadromous fish from habitat upstream of river mile 596.6 after 1938. The concurrent Grand Coulee Fish Maintenance Project (GCFMP) influenced the present distribution of the ESU. Non-listed Carson-origin spring-run chinook salmon are also produced within the UCRS chinook salmon ESU. Non-listed spring-run chinook salmon hatchery populations contained within this ESU include Leavenworth, Entiat, and Winthrop national fish hatcheries.

Steelhead are not thought to have occurred in large numbers in British Columbia, Canada, in the Upper Columbia River Basin. Estimates of historical (pre-1960s) abundance specific to this ESU are available from fish counts at dams. Counts at Rock Island Dam from 1933 to 1959 averaged 2,600 to 3,700, suggesting a pre-fishery run size exceeding 5,000 adults for tributaries above Rock Island Dam. Runs may already have been depressed, however, by lower Columbia River fisheries and other habitat degradation problems in the natal tributaries. Grand Coulee Dam blocked anadromous fish from habitat upstream of river mile 596.6 after 1938. The concurrent GCFMP also influenced the present distribution of the ESU. In 1961, the Chief Joseph Dam also blocked anadromous fish from remaining habitat upstream of river mile 545.1.

Existing Activities.

The White River watershed supports both dispersed and developed recreation activities, most of which are adjacent to the White River. Dispersed recreation includes hunting, camping, hiking, non-motorized biking, snowmobiling, cross-country skiing, wildlife viewing, mushroom hunting, berry picking, scenic driving, and soap stone gathering. Snowmobile use occurs mostly on the existing road systems and there are no groomed snowmobile or cross-country ski trails in the watershed. Developed recreation includes three “rustic” campgrounds, two trailheads, and the White River Auto Tour with five stops, two are at developed sites. There are six known dispersed camp areas in the watershed. The Glacier Peak Wilderness encompasses the middle and upper White River watershed.

A large percentage of the lower White River is privately owned (areas from the mouth up to Napeequa River) and residential development is an on-going activity. Tall Timber Ranch, located at the White River and Napeequa confluence, operates summer and winter camps. Sheep grazing occurs in September on private lands in the lower White River. The White River is a high emphasis area for wetlands/river habitat restoration, land acquisitions, and conservation easements by the Washington Department of Fish and Wildlife, Chelan County Natural Resources Program, and Chelan-Douglas Land Trust.

2.2 Analysis of Effects

Effects of the action are defined as "the direct and indirect effects of an action on the species, or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02).

Interdependent actions are those that have no independent utility apart from the action under consideration (50 CFR 402.02).

2.2.1 Habitat and Species Effects

The BA for the proposed action analyzes the effects of the proposed action on UCRS chinook and UCR steelhead in the action area. The analysis uses the best scientific and commercial data available to evaluate elements of the proposed action that have the potential to affect listed fish.

2.2.1.1 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).

2.2.1.1.1 Turbidity. The Forest Service proposes construction in and near the water, which can mobilize sediments and temporarily increase local turbidity levels in the White River. In the immediate vicinity of construction (several meters), the level of turbidity would likely exceed natural background levels, which would adversely affect fish. Quantifying turbidity levels and their effect on fish species is complicated by several factors. First, turbidity from an activity typically decreases as distance from the activity increases. How quickly turbidity levels attenuate depends on the quantity of materials in suspension (*e.g.*, mass or volume), the particle size of suspended sediments, 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, the temperature of the water, and the lifestage of the fish.

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 are 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 (35-150 nephelometric turbidity units [NTUs]) accelerate foraging rates among juvenile chinook salmon, likely because of reduced vulnerability to predators (camouflaging effect).

The proposed action is expected to create short-term (a few minutes) sediment pulses over a period of several days that are likely to be intense in the immediate vicinity of the streambed excavation. Turbidity levels are expected to rapidly attenuate in a downstream direction and the turbidity plume is expected to be largely confined to the left bank of the White River. Accordingly, free swimming adult and juvenile salmonids that might be irritated by the elevated

turbidity levels should have no trouble finding local refuge. In addition, the Forest Service will take measures to decrease the likelihood and extent of any such effect on listed salmonids; the conservation measures listed in section 1.2.3 are intended to minimize the amount of turbidity generated by the project, and should ensure that turbidity levels remain below lethal or injurious levels.

2.2.1.1.2 Chemical Contaminants. As with all construction activities, accidental release of fuel, oil, and other petroleum based contaminants may occur. These contaminants could injure or kill aquatic organisms if spilled into a water body or the adjacent riparian zone. The magnitude of the effect will depend on the attributes of the contaminant, the size of the spill, and the time it takes to contain the spill. However, because the Forest Service will fuel and maintain all equipment in designated staging areas outside of riparian reserves and away from the stream channel, and will use the conservation measures listed in section 1.2.3, the likekihood of such contamination is low.

2.2.1.1.3 Riparian Vegetation. The proposed project will cause a small, short-term (1 to 10 years) loss of riparian function by the removal of vegetation, though there will be a long-term (greater than 10 years) benefit as vegetation establishes on the old roadbed. The loss of vegetation may affect riparian habitat functions such as shading and organic matter inputs to the stream but these effects should be minimal because of the small footprint of the project and the small number of, if any, large trees to be removed. Therefore, large woody debris recruitment is not expected to be significantly reduced by the proposed project. The duration of vegetation loss will be minimized by seeding with native plants that will provide additional long term cover for fish. The Forest Service will minimize negative effects of these activities on UCR steelhead, UCRS chinook, and aquatic habitat indicators by implementing construction methods and approaches included in the project design and conservation measures.

2.2.1.1.4 Streambed and Streambank Alteration. The bank stabilization project will disturb approximately 2,000 square feet of streambed and bank. The three in-bank structures will require a maximum of 955 square feet of in-water mechanical disturbance. In addition, the three structures are intended to alter the hydrology and flow characteristics for a short segment of the White River. It is difficult to speculate on the exact changes that will occur to the hydraulic dynamics of this segment of the river, however, it is assumed that the thalweg will shift towards the center of the river. In addition, the structures may create additional pools and complex habitat than what currently exists. NOAA Fisheries believes that the use of large woody debris and the increase in more heterogeneous conditions may benefit salmonids in this segment of the White River.

2.2.1.1.5 Mechanical Injury

The in-water construction of the three bank stabilization structures has the possibility for mechanical injury or death to salmonids from excavation. NOAA Fisheries believes that the probability of direct effects to juvenile UCR steelhead and/or UCRS chinook are very low, with the probability of direct injury to adults near zero. The work window for the project will occur

when UCRS chinook are holding, just prior to spawning, and juveniles are rearing in the action area. UCR steelhead fry will have just emerged from the gravel and there could be juveniles rearing. In addition, all of the work will be confined to the left bank of the river, allowing fish to leave the disturbed area.

2.2.1.2 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.

2.2.1.2.1 Failure of Instream Structures. The proposed project may cause lateral channel shifts and/or bank erosion, or the possibility of the structures readjusting or completely failing. Artificial instream structures have a limited lifespan. The effects of structure readjustment and/or failure are indirect because they are likely to occur much later in time, particularly as the structures reach the end of their design life. However, the design life could be reduced by changes in land use activities upstream of the action area, such as increases in impervious surface which modifies winter and summer flows. When and if the structures ultimately fail, eggs and intra-gravel fry of listed salmonids that may have spawned in the gravel immediately downstream of the structures are likely to be displaced or covered by sediment. The failure could result in the mortality of eggs and alevins as a result of incremental shifting of the structures or during a catastrophic failure of one or more of the structures. However, due to the use of native materials for the structures, and the likelihood that failure will occur when fish are large enough to evacuate the area, NOAA Fisheries believes the risk to listed salmonids is low.

2.2.2 Population Scale Effects

As detailed in section 2.1.2, NOAA Fisheries has estimated the median population growth rate (lambda) for each species affected by this project. Under the environmental baseline, life history diversity has been limited by the influence of hatchery fish, 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 ESUs that are the subject of this consultation.

Pacific salmon populations are also substantially affected by variations in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Pacific salmon populations. Stochastic events in freshwater (flooding, drought, snowpack conditions, volcanic eruptions, etc.) can play an important role in a species' survival and recovery, but those effects tend to be localized compared to the effects associated with the ocean. The survival and recovery of these species depends on their ability to persist through periods of low natural

survival due to ocean conditions, climatic conditions, and other conditions outside the action area. Freshwater survival is particularly important during these periods because enough smolts must be produced so that a sufficient number of adults can survive to complete their oceanic migration, return to spawn, and perpetuate the species.

Specifically in the action area, the White River road relocation and bank stabilization project is expected to add temporary, construction-related effects to the existing environmental baseline. However, these effects, as detailed in section 2.2, are not expected to have any significance at the population level. Therefore, NOAA Fisheries believes that the proposed action does not contain measures that are likely to influence population trends of the affected ESUs.

2.2.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." These activities within the action area also have the potential to adversely affect the listed species. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate section 7 consultation processes. Federal actions that have already undergone section 7 consultations have been added to the description of the environmental baseline in the action area.

State, tribal, and local government actions will likely be in the form of legislation, administrative rules or policy initiatives. Government and private actions may include changes in land and water uses, including ownership and intensity, any of which could adversely affect listed species or their habitat. While specific government actions are subject to political, legislative, and fiscal uncertainties, changes in the economy have occurred in the last 15 years, and are likely to continue, with less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demands for buildable land, electricity, water supplies, waste-disposal sites, and other infrastructure.

Economic diversification has contributed to population growth and movement, and this trend is likely to continue. Such population trends will result in greater demands for electricity, water, and buildable land in the action area, and will increase the need for transportation, communication, and other infrastructure. These economic and population demands will probably affect habitat features such as water quality and quantity, which are important to the survival and recovery of the listed species. The overall effect will likely be negative, unless carefully planned for, and avoided or mitigated.

The state of Washington has various strategies and programs designed to improve the habitat of listed species and assist in recovery planning. Washington's 1998 Salmon Recovery Planning Act provided the framework for developing watershed restoration projects and established a funding mechanism for local habitat restoration projects. The Watershed Planning Act, also

passed in 1998, encourages voluntary planning by local governments, citizens, and Tribes for water supply and use, water quality, and habitat at the Water Resource Inventory Area or multi-Water Resource Inventory Area level. Washington's Department of Fish and Wildlife and tribal comanagers have been implementing the Wild Stock Recovery Initiative since 1992. The comanagers are completing comprehensive species management plans that examine limiting factors and identify needed habitat activities. Water quality improvements will be proposed through development of Total Maximum Daily Loads (TMDLs). The state of Washington is under a court order to develop TMDL management plans on each of its 303(d) water-quality-listed streams. It has developed a schedule that is updated yearly; the schedule outlines the priority and timing of TMDL plan development. These efforts should help improve habitat for listed species. Washington State closed the mainstem Columbia River to new water rights appropriations in 1995, but lifted this moratorium in 2002. The state has proposed to mitigate the effects of new water appropriations by purchasing or leasing replacement water when Columbia River flow targets are not met. However, the efficacy of this program is unknown at the present time.

Specifically, in the White River Watershed the majority of impacts appear to be linked to floodplain development and disturbance to riparian and upslope areas from timber harvest and roads. Other actions foreseen in the watershed, on public lands, include: a decorative-rock special use permit; soapstone removal (on-going); firewood gathering (on-going); campground hazard tree maintenance (on-going); and the Yakama Nation coho salmon reintroduction (on-going). There are no long-term plans to add roads, high-use trails, or conduct commercial vegetation management on Forest Service system lands in the watershed. However, on private lands a continual amount of development is occurring, adding homes and vacation retreats. The combined efforts of State, Federal, County, and private landowners to protect floodplain and wetland habitat through land acquisitions, land exchanges, and conservation easements coupled with restoration activities on public land may help reduce the effects from ongoing development on private lands.

2.3 Conclusion

NOAA Fisheries has reviewed the direct, indirect, and interrelated and interdependent effects of the proposed action on the above listed species and their habitat. NOAA Fisheries evaluated these effects in light of effects from existing conditions in the action area and the future measures toward recovery both in and outside of the action area. The proposed action is likely to cause short-term adverse effects on listed salmonids through injury and habitat modification. These effects are unlikely to reduce salmonid distribution, reproduction, or numbers in any meaningful way. Consequently, the proposed action is not likely to jeopardize the continued existence of listed UCRS chinook and/or UCR steelhead.

2.4 Reinitiation of Consultation

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 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.

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 that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.5.1 Amount or Extent of Take

As stated in section 2.1.2, above, UCRS chinook and UCR steelhead use the action area for migratory purposes, spawning, and rearing. The UCRS chinook and UCR steelhead are likely to be present in the action area any day of the year, including during construction of the proposed project. Therefore, incidental take of these listed fish is reasonably certain to occur. The proposed action includes measures to reduce the likelihood and amount of incidental take. To ensure the action agency will implement these measures, take minimization measures included as part of the proposed action are restated as Terms and Conditions below.

Take caused by the proposed action is likely to be in the form of harm, where habitat modification will kill or injure salmonids through significant impairment of their normal behavior patterns. Death or injury of salmonids may also result from construction activities. The amount or extent of take is difficult, if not impossible to estimate because of the highly variable nature of presence of anadromous species over time, and the inexact relationship between habitat condition and fish use. In instances where the number of individual animals to be taken cannot be reasonably estimated, NOAA Fisheries uses a surrogate approach. The surrogate should provide an obvious threshold of authorized take which, if exceeded, provides a basis for reinitiating consultation.

This Opinion analyzes the geographic, temporal, and areal extent of effects from the road relocation and bank stabilization project in the White River Watershed. Some of this work will occur in riparian areas of the White River, however most of the work will occur over the current road prism, which will be rehabilitated upon completion of the project. Because NOAA Fisheries cannot estimate the number of fish that will be injured or killed by these occurrences, the extent of take anticipated in this statement is that harm, death, or injury that will occur from disturbing 2,000 square feet of streambank and 955 square feet of streambed. Should any of these thresholds be exceeded during project activities, the reinitiation provisions of this Opinion apply.

2.5.2 Reasonable and Prudent Measures

Reasonable and Prudent Measures (RPMs) are non-discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions for the exemption in section 7(o)(2) to apply. The Forest Service has the continuing duty to regulate the activities covered in this incidental take statement. If the Forest Service fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, 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 activities carried out in a manner consistent with these reasonable and prudent measures, except those otherwise identified, will not necessitate further site-specific consultation. Activities which do not comply with all relevant reasonable and prudent measures will require further consultation.

NOAA Fisheries believes that the following reasonable and prudent measure is necessary and appropriate to minimize take of listed fish resulting from implementation of the action:

1. The Forest Service shall avoid or minimize incidental take from general construction by limiting the timing, location, and type of activities that adversely affects aquatic systems.

2. The Forest Service shall avoid or minimize incidental take from riparian disturbance.

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 measure described above. These terms and conditions are non-discretionary.

1. To implement the RPM No. 1 above the Forest Service shall ensure that:

   a. Timing of In-Water Work. To limit project work during the time of the year most appropriate for the project location to minimize adverse effects to ESA-listed fish by conducting work when ESA-listed fish are less likely to be present or where spawning is not eminent, actively occurring, or recently completed.

      Complete work below bankfull elevation during the recommended in-water work period as indicated in the most recent WDFW preferred in-water work period for the project area, unless otherwise approved in writing by NOAA Fisheries.

   b. Pollution and Erosion Control Plan (PECP). The Forest Service shall develop a PECP that includes methods and measures to minimize erosion and sedimentation associated with the project. The PECP elements shall be in place before and at all times during the appropriate construction phases. The elements of water quality; spill prevention control and containment; site preparation; heavy equipment usage; earth moving; temporary stream crossings; dewatering; flow reintroduction; and site restoration should be included in the PECP.

   c. Spill Prevention Control and Containment Plan (SPCP). The Forest Service shall develop or verify the existence of a SPCP for the project. The SPCP will include the following:

      (1) A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

      (2) Notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

   d. Site Preparation. The Forest Service shall:

      (1) Flag boundaries of clearing limits associated with site access, riparian crossings, stream crossings, staging and stockpile areas to minimize overall disturbance and disturbance to critical vegetation.

(2) Establish staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, etc) along existing roadways or turnouts beyond the 100-year floodprone area in a location and manner that will preclude erosion into or contamination of the stream or floodplain.

(3) Minimize clearing and grubbing activities and stockpile large wood, trees, riparian vegetation, other vegetation, sand, and topsoil removed for establishment of staging area for site restoration.

(4) Place sediment barriers around disturbed sites to prevent erosion and sedimentation associated with equipment and material storage sites, fueling operations, and staging areas from entering the stream directly, through natural drainage or road side ditches.

(5) Monitor and maintain erosion controls until site restoration is complete.

(6) If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

e. Heavy Equipment. The Forest Service shall minimize fuel/oil leakage from construction equipment into the stream channel and floodplain through the following:

(1) All equipment used for instream work shall be cleaned and leaks repaired before arriving at the project site. Remove external oil and grease, along with dirt and mud. Inspect all equipment before unloading at site. Thereafter, inspect equipment daily for leaks or accumulations of grease, and fix any identified problems before entering streams or areas that drain directly to streams or wetlands.

(2) Equipment used for instream or riparian work shall be fueled and serviced in an established staging area. When not in use, vehicles will be stored in the staging area.

(3) Two oil-absorbing, floating booms appropriate for the size of the stream shall be available on site during all phases of construction whenever surface water is present. Place booms in a location that facilitates an immediate response to potential petroleum leakage.

(4) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 feet of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

f. Earthmoving. The Forest Service shall minimize sedimentation resulting from earthmoving construction activities through the following:

(1) Minimize amounts of construction debris and soil falling into streams by installing appropriate erosion control barriers before construction. Such barriers should be maintained throughout the related construction and removed only when construction is complete. When possible, remove debris or large earth spills that have fallen into the channel.

(2) Delineate construction impact areas on project plans and confine work to the noted area. Confine construction impacts to the minimum area necessary to complete the project.

(3) Keep a supply of erosion control materials (*e.g.*, silt fence and straw bales) on hand to respond to sediment emergencies. Use sterile straw or weed free certified straw bales to prevent introduction of non-native weeds.

(4) Cease all project operations, except efforts to minimize storm or high flow erosion, under high flow conditions that result in inundation of the project area.

(5) Stockpile native streambed materials above the bankfull elevation for later use in project restoration. To prevent contamination from fine soils, these materials shall be kept separate from other stockpiled material, which is not native to the streambed.

g. Site Restoration. The Forest Service shall minimize sedimentation through site restoration by including the following:

(1) Upon project completion, remove project-related waste. Initiate rehabilitation of all disturbed areas in a manner that results in similar or better than pre-work conditions through spreading of stockpiled materials, seeding, and/or planting with native seed mixes or plants. If native stock is not available, use soil-stabilizing vegetation (seed or plants) that does not lead to propagation of non-native species.

(2) Develop a restoration work plan with sufficient detail to include a description of the following elements, as applicable:
   i. A plan to control non-native invasive vegetation.
   ii. Site management and maintenance requirements.

(3) No herbicide application will occur as part of the permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

(4) When necessary, loosen compacted access roads, stream crossings, stream channel within the de-watered work area, staging, and stockpile areas.

(5) Instream or floodplain restoration materials such as large wood and boulders shall mimic as much as possible those found in the project vicinity. Such materials may be salvaged from the project site or hauled in from offsite but cannot be taken from streams, wetlands, or other sensitive areas.

(6) Do not fell conifers in the riparian area for restoration purposes unless conifers are fully stocked or if necessary for safety. If necessary for safety, fell trees toward the stream and leave in place or place them in the stream channel or floodplain. This does not apply to conifer removal in areas necessary for project completion staging and stockpile areas, and access roads.

(7) Complete necessary site restoration activities within five days of the last construction phase. Replant each area requiring vegetation before the first April 15 following construction.

h. Salvage Notice. Include the following notice in writing to each party that will supervise completion of the action.

NOTICE. If a sick, injured, or dead specimen of a threatened or endangered species is found, the finder must notify the Northwest Office of NOAA Fisheries Law Enforcement at (206) 526-6133. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

2. To implement RPM No. 2 above, the Forest Service shall monitor riparian plantings annually by April 15 of each year for a period of 5 years to guarantee a minimum survival rate of 85%. At the end of each year all dead plants shall be replaced. Reports including photo documentation shall be submitted to Justin Yeager at National Marine Fisheries Service, 510 Desmond Drive, SE, Suite 103, Lacey, Washington. 98503.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA 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 would 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)).

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

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

The objectives of this EFH consultation are to determine whether the proposed action would 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; 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 section 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

As described in detail in section 2.2 of this document, the proposed action may result in short- and adverse effects to a variety of habitat parameters.

1. The proposed action will result in a temporary risk of contamination of waters through the accidental spill or leakage of petroleum products from heavy equipment.

2. The proposed action will result in a short-term degradation of water quality (turbidity) because of instream construction activities.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action will 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 which may adversely affect EFH. NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the Forest Service, and believes these measures are sufficient to minimize, to the maximum extent practicable, the following EFH effects; contamination of waters, suspended sediment, sound, benthic habitat removal, and predation. However, these conservation measures are not sufficient to fully address the remaining adverse affects to EFH. Consequently, NOAA