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

Refer to:
OSB2000-0175-FEC-RI

August 3, 2001

Mr. Lawrence C. Evans
Portland District, Corps of Engineers
CENWP-OP-GP (Davis)
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation, Sheely Creek Road Slide Repair and Bank Stabilization Project, Columbia County, Oregon (Corps No. 1999-00596)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) for the Sheely Creek Road Slide Repair and Bank Stabilization Project near Vernonia, Oregon. NMFS concludes in this Opinion that the proposed action is not likely to jeopardize Oregon Coast coho salmon (*Oncorhynchus kisutch*) or destroy or adversely modify critical habitat. Pursuant to section 7 of the ESA, NMFS has included reasonable and prudent measures with non-discretionary terms and conditions that NMFS believes are necessary and appropriate to minimize the potential for incidental take associated with this project. This Opinion also serves as consultation on Essential Fish Habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR Part 600).

Questions regarding this letter should be directed to Rob Markle of my staff in the Oregon Habitat Branch at 503.230.5419.

Sincerely,

Michael R Course

Donna Darm
Acting Regional Administrator

Endangered Species Act
Section 7 Consultation
&
Magnuson-Stevens Act
Essential Fish Habitat Consultation

BIOLOGICAL OPINION

Sheely Creek Road Slide Repair and Bank Stabilization
Columbia County, Oregon
(Corps No. 1999-00596)

Agency: U.S. Army Corps of Engineers, Portland District

Consultation Conducted by: National Marine Fisheries Service,
Northwest Region

Date Issued: August 3, 2001

Refer to: OSB2000-0175-FEC-RI

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1. ENDANGERED SPECIES ACT

1.1 Background

On June 6, 2000, the National Marine Fisheries Service (NMFS) received a letter from the Corps of Engineers (Corps) requesting concurrence with its determination that issuance of a permit under section 404 of the Clean Water Act for the repair of a slide area that has eroded one lane of Sheely Creek Road and to stabilize the bank of the Nehalem River at river mile 91.0 (actually river mile 92.5) is not likely to adversely affect listed anadromous fish and designated critical habitats in the project area. On September 19, 2000, the NMFS issued a letter of nonconcurrence with the Corps' effects determination, and requested the Corps initiate formal consultation on this project. On March 30, 2001, the NMFS participated in a site visit with the Corps and Columbia County Road Department (CCRD, the applicant) to discuss the proposed action. The CCRD revised the proposed action, reducing the proposed rock volume and the project length and incorporating plantings and a drift fence to collect organic materials. On May 21, 2001, the NMFS received a letter from the Corps requesting formal consultation pursuant the Endangered Species Act (ESA) and Essential Fish Habitat consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for the subject action. This consultation is undertaken pursuant to section 7(a)(2) of the ESA and its implementing regulations (50 CFR Part 402), and pursuant to section 305(b) of the MSA and its implementing regulations (50 CFR Part 600).

Sheely Creek Road is approximately 0.7-mile long and parallels the Nehalem River. The road provides access from State Highway 47 to several private residences and a U-Haul business. The road has a 20-foot wide gravel surface. Four feet of roadway along an approximate 70-foot section of roadway has been lost at approximately road mile 0.4. The road is currently limited to single lane traffic. The proposed project site is on the outside of a river bend where the road traverses a slope. Supporting information provided by the action agency has not identified whether the problem is the result of toe erosion and mass failure due to meander extension or local scour.

The purpose of the proposed action is to protect the integrity of Sheely Creek Road at milepost 0.4. This is necessary to protect the traveling public and keep the road open to traffic. High winter flows threaten the complete loss of a 200-foot section of road. Sheely Creek Road provides the only means of road access to area residents and a business.

This biological opinion (Opinion) considers the potential effects of the proposed action on Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch),* which occur in the proposed project area. OC coho salmon were listed as threatened under the ESA on August 10, 1998 (63 FR 42587), critical habitat was designated on February 16, 2000 (65 FR 7764) and protective regulations were issued on July 10, 2000 (65 FR 42422). The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of OC coho salmon, or destroy or adversely modify designated critical habitat for this species. This

consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

1.2 Proposed Action

The proposed action is issuance of a permit by the Corps under section 404 of the Clean Water Act for the Sheely Creek Road Slide Repair and Bank Stabilization Project, Columbia County, Oregon. The CCRD proposes to place 1,355 cubic yards (cy) of rock fill material below the ordinary high water elevation (OHW) [also known as bankfull elevation[1]] along a 245-foot section of roadway. The embankment is proposed to be faced with 24- to 48-inch diameter rock at a 1.3:1 ratio (horizontal:vertical) backfilled with 6- to 24-inch diameter supporting material. The embankment slope will be extended above the OHW to the road shoulder edge with vegetated geo-grid (Fortrac 35/20-20, or equivalent).

Initially, approximately 1,036 cy of material will be excavated from the failing slope. A toe trench will be excavated in the wet and toe rock placed in an irregular profile. Four 20- to 30-foot long logs with root wads attached will be placed along the embankment toe. The logs will be on a 40- to 50-foot spacing and oriented upstream at a 75-degree angle off the flow vector. Rock will ascend nearly 10 to 12 vertical feet above the riverbed. Willow bundles will be placed within the rock during construction. Drift fences constructed using 8-foot branches (~4-inch diameters) will be placed between the log structures from the low-water elevation upslope to the OHW.

The proposed drift fence design is a revision of that used approximately ten miles downstream on the Pittsburg Junction Slide Repair Project (OSB1999-0164) completed by the Oregon Department of Transportation. Drift fence branches will be embedded 5 feet in the rock riprap. Geo-grid will be planted with willows (*Salix* sp.) and red-osier dogwood (*Cornus* sp.). The proposed action will be take approximately one month to complete. All work is proposed to occur during the ODFW recommended in-water work window for the upper Nehalem River, July 1 to August 31.

The proposed project includes the following set of best management practices (BMPs) designed to reduce adverse environmental impacts. The NMFS regard these BMPs as integral components of the project and considers them to be part of the proposed action.

- All work will occur during the ODFW recommended in-water work window of July 1 to August 31, to minimize the presence of migrating and spawning OC coho salmon at the project site and allow work to occur during the dry season.

[1] "Bankfull elevation" means the bank height inundated by a 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

- Vegetation removal will be limited to the minimum necessary. Removal of riparian vegetation will be mitigated by plantings.

- Equipment will work from above the banks of the channel.

- Rock will be individually placed. No end dumping will occur.

1.3 Biological Information and Critical Habitat

Although limited data are available to assess population numbers or trends, NMFS believes that all coho salmon stocks comprising the OC coho salmon ESU are depressed compared with past abundance. The status and relevant biological information concerning OC coho salmon are well described in the proposed and final rules from the Federal Register (July 25, 1995, 60 FR 38011; and May 6, 1997, 62 FR 24588, respectively), and Weitkamp *et al.* (1995).

Abundance of wild coho salmon spawners in Oregon coastal streams declined from about 1965 to roughly 1975 and has fluctuated at a low level since then (Nickelson *et al*. 1992). Spawning escapements for this ESU may be at less than 5% of abundance from that in the early 1900s. Contemporary production of coho salmon may be less than 10% of the historic production (Nickelson *et al*. 1992). Average spawner abundance has been relatively constant since the late 1970s, but preharvest abundance has declined. Average recruits-per-spawner may also be declining. The OC coho salmon ESU, although not at immediate danger of extinction, may become endangered in the future if present trends continue (Weitkamp *et al*. 1995).

Timing of adult coho salmon river entry is largely influenced by river flow. Coho salmon normally wait for freshets before entering rivers. In the Nehalem River, adults return between late-September and mid-January (J. Sheahan, ODFW, personal communication via telephone conversation with R. Markle, 3 May 2000) with peak upstream migration usually occurring in October when the fall rains return (Weitkamp *et al*. 1995). OC coho salmon spawn in the Nehalem River basin between early-November and late-January with peak spawning occurring in late November to early December (Weitkamp *et al*. 1995). Juvenile coho salmon rear for one year in fresh water before migrating to the ocean. Juvenile OC coho salmon migrate out of the Nehalem River basin as smolts between early-March and mid-May[2]. Peak outmigration typically occurs in mid-April or earlier (Weitkamp *et al*. 1995).

The proposed action will occur in designated critical habitat for OC coho salmon. Critical habitat for OC coho salmon includes Oregon coastal river basins (freshwater and estuarine areas) between Cape Blanco and the Columbia River. Freshwater critical habitat includes all waterways, substrates, and adjacent riparian areas—areas adjacent to a stream that provides the following functions: shade, sediment, nutrient or chemical regulation, streambank stability, and

[2] Telephone interview with J. Sheahan, Oregon Department of Fish and Wildlife (May 3, 2000) (discussing OC coho migration in the Nehalem River).

input of large woody material or organic matter—below longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and several dams that block access to former coho salmon habitats. For the purposes of this consultation, the adjacent riparian zone has been defined as the distance equal to the height of one site-potential tree, or 210-foot slope distance, from the edge of the active channel. The entire proposed action will take place within the active channel and adjacent riparian zone.

1.4 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NMFS uses the following steps: (1) Consider the status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NMFS determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the listed species or result in destruction, adversely modify their critical habitat, or both. If NMFS finds that the action is likely to jeopardize the listed species, NMFS must identify reasonable and prudent alternatives for the action.

1.4.1 Biological Requirements

The first step in the methods NMFS uses for applying the ESA to listed salmon is to define the biological requirements of the species most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list OC coho salmon for ESA protection and also considers new data available that are relevant to the determination (Weitkamp *et al.* 1995).

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

For this consultation, the biological requirements are improved habitat characteristics that function to support successful spawning, rearing and migration. The current status of the OC coho salmon, based upon their risk of extinction, has not significantly improved since the species was listed and, in some cases, their status may have worsened.

1.4.2 Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect affects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. For this consultation, the action area includes the affected streambed, bankline, adjacent riparian zone, and aquatic areas of the Nehalem River from approximately river-mile 92.5 downstream to approximately river-mile 91.5.

The bulk of production for the OC coho salmon ESU is skewed to its southern portion where the coastal lake systems (e.g., Tenmile, Tahkenitch, and Siltcoos Basins) and the Coos and Coquille Rivers are more productive. The proposed action area is in the northern half of the ESU where production is more depressed and habitats in the action area are under seeded. OC coho salmon use the Nehalem River as a migration corridor, and for spawning and rearing. Spawning is known to occur in both upstream and downstream reaches and tributaries of the Nehalem River.

The Nehalem River originates in the coast mountain range and flows 118.5 miles to the Pacific Ocean (PSU 1999). The watershed is 855 square miles and predominately consists of coniferous forests. Lower reaches include marshlands and estuaries. Most precipitation in the Nehalem River Basin at Vernonia occurs as rain, with approximately 80% falling from October through March (WRCC 2000). The flooding that occurred in the watershed in February 1996 was the result of a rain-on-snow event where snow accumulated at low elevations and was followed by warm rains. Streamflow data at river mile 13.5 provided by USGS (2000), shows the February 1996 flow was a record 70,300 cubic feet per second (cfs), or 132% of second highest annual peak on record (53,400 cfs) from 1940 to 1998. This peak was 244% of the annual average peak flow (28,060 cfs; n=59) (USGS 2000).

State and private lands represent 98% of the land holdings within the watershed. The state of Oregon owns 38% and private parties own 60%. The remaining 2% is under Federal ownership (Bureau of Land Management). The dominant land-use within the Nehalem watershed is forestry (92% of land). Private timber company lands comprise 47% of the watershed. Longview Fibre (21%) and Willamette Industries (17%) are the largest private land owners (PSU 1999).

The Nehalem River subject reach flows through mountainous, coniferous forested terrain. The system is heavily fished for salmon and coastal cutthroat trout. Riparian vegetation along this reach consists predominately of willows, red alders (*Alnus rubra*), and mixed conifers.

The Cook Creek to Rock Creek reach of the Nehalem River appears on the Oregon Department of Environmental Quality (ODEQ) 303(d) List of Water Quality Limited Water Bodies for temperature (ODEQ 2000). The proposed project site is approximately 1.8 miles upstream of the listed reach. Fourteen of 27 ($52^{\%}$) sample values collected during summer at the lower extent of the reach exceeded the temperature standard (64^{0}F). Exceedences were recorded in 1980, 1982, and 1984 to 1993 between water years 1979 to 1993. The maximum observed temperature was 70.7^{0}F.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Actions

Rivers are dynamic systems that perpetually alter their courses in response to multiple physical criteria. Houses and other structures constructed along waterways are subject to flooding and undercutting as a result of these natural changes in the stream course. Structural embankment hardening has been a typical means of protection for structures along waterways. Impacts to waterways from revetment installation are simplification of stream channels, alteration of hydraulic processes, and prevention of natural channel adjustments (Spence *et al*. 1996). Moreover, embankment hardening may shift the erosion point either upstream or downstream of the subject site and contribute to stream velocity acceleration. As erosive forces affect different locations and bank hardening occurs in response, the river eventually attains a continuous fixed alignment lacking habitat complexity (USACE 1977).

Fish habitats are enhanced by the diversity of habitats at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature. Overhanging branches provide cover from predators. Organisms that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, shelter from swift currents during high flow events, retain bed load materials, and reduce flow velocity.

The most desirable method of bank protection is revegetation. However, revegetation alone can seldom stabilize banks steeper than 3:1 (horizontal:vertical) or areas of high velocity (USACE 1977). Although they are biologically less desirable, fixed structures provide the most reliable means of bank stability. The use of structural measures should be a last resort. Combining structural measures (i.e., sloped riprap or mechanically stabilized earth walls), vegetation and large woody material (LWM) is preferable to a structural solution without vegetation (USACE 1977).

The parameters that can potentially be affected by the proposed construction include water quality (temperature, sediment, and chemical contamination), gravel recruitment, LWM recruitment, and stream hydraulics. Direct impacts related to project activities may occur on juvenile OC coho salmon rearing in the Nehalem River reach.

Temperature

Water temperatures may be degraded by construction activities. Vegetation removal, primarily unidentified grasses and shrubs, will occur along 175 feet of the 245-foot embankment proposed for hardening. A 70-foot portion of the embankment that is actively sliding is essentially lacking vegetation. While existing vegetation provides minimal functional shade during low flow periods, the proposed plantings of willow and red-osier dogwood will provide limited shading of the bank.

The replacement of any existing vegetation with rock has the potential to elevate stream temperature. Rock riprap may function as a conductive heat source. Spence *et al*. (1996) states that the nature of the substrate may affect heat transfer, and bedrock more efficiently transfers heat than gravels. Therefore, it can be deduced that the greater the mass available to receive solar radiation the greater the heating potential. Heat collected by the rock during the day elevates night time temperatures thereby dampening diel temperature fluctuations.

NMFS does not expect the proposed action in and of itself will result in a measurable increase in stream temperature, but will contribute to any cumulative effect of riparian vegetation removal and streambank hardening within the watershed.

Sediment

Excavation of a toe trench in the wetted channel will result in short-term releases of sediment. Fine sediment introduced into a water body can cause turbidity. An increase in turbidity can affect fish and filter-feeding macro-invertebrates downstream of the work site. At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult fish (Spence *et al.* 1996, Berg and Northcote 1985).

Transportation of sediments to the river is also possible. Ground disturbance activities will expose and dislodge soils. Any precipitation during select periods of vulnerability may result in erosion of soils and increases in stream turbidity.

To minimize the potential for stream turbidity and direct impacts to fish, work will occur during the ODFW recommended in-water work window (July 1 to August 31). During this window, river flows are typically low, fish presence is reduced, and rainfall is minimal. Low flows will allow most of the work to occur in the dry, thereby reducing indirect (turbidity) and direct impacts to fish. Fish presence is minimal with rearing juveniles potentially present, but no adult spawning or egg incubation occurring. The low probability of rainfall reduces the likelihood that sediment will be transported into the river. Based on data provided by the Western Regional Climate Center (2000) for Vernonia, average rainfall during the anticipated work period (August) represents 2.1% of the annual with less than a 5% probability of receiving 0.5 inches of

rainfall on any given day. The precipitation probability increases greatly after August 31, as does the potential presence of returning adult coho salmon.

Chemical Contamination

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, etc., which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. Herbicides used to clear vegetation may be used in riparian areas, where they may enter water bodies. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs) which can cause acute toxicity to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and nontarget riparian vegetation (Spence *et al.* 1996).

To minimize the potential for chemical contamination, equipment will work from above the banks of the channel. Herbicide use is not proposed as part of this action.

Gravel Recruitment

Armoring streambanks removes a potential gravel source from the stream system, and typically results in gravel recruitment occurring at another site. The cumulative effect of bank hardening may lead to loss of enough sources that the waterway becomes gravel limited. Streams continuously transport eroded material downstream from areas of erosion to areas of deposition. Transport varies with discharge and is therefore episodic (Kondolf 1994). A net loss of gravel recruitment to the system may ultimately result in the loss of sufficient gravels to support successful salmon spawning.

NMFS does not expect that the proposed action in and of itself will result in a measurable loss in gravel production, but will contribute to any cumulative effect of bank hardening within the watershed.

Large Woody Material Recruitment

A minor loss of LWM recruitment potential will occur where vegetation will be removed and replaced with rock. An unspecified, though minimal number of woody plants are proposed for removal as part of this action. Riparian vegetation removal will impact approximately 175 feet of streambank. A 70-foot section of the existing embankment is essentially devoid of functional vegetation. As indicated previously, replanting willow and red-osier dogwood along the top of the slope is proposed. These species will not produce functional LWM for the waterway. Currently, some woody debris is found on-site and will be allowed to remain in the channel. The recruitment potential of LWM upslope of the road is not affected by this proposed action.

Stream Hydraulics

The placement of riprap along a 245-foot length of streambank represents a simplification of habitat. Simplification of the embankment may result in velocity acceleration and subsequent relocation of erosion to another site, either upstream or downstream. Simplification also reduces refugia sites for fish, which assist in predator avoidance and maintenance of position during high flow events.

The NMFS expects that the proposed action will result in additional sites of erosion and fish displacement, though project design features (e.g., irregular rock toe, root wads, drift fence) may provide limited velocity reduction and refugia benefits to reduce impacts.

1.5.2 Effects on Critical Habitat

The NMFS designates critical habitats based on physical and biological features that are essential to the listed species. Essential features of designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. The proposed action area will occur within designated critical habitat for OC coho salmon.

The presence of bridges and other bank developments in the area affects critical habitat in the long term by restricting natural channel forming processes, altering stream hydrology, reducing riparian vegetation, increasing stream temperature, and reducing allochthonous input. In addition, Peters *et al.* (1998) found that densities of juvenile coho salmon were generally reduced at riprapped sites when compared with areas containing large woody debris or undercut banks. Where rock riprap exists, Lister *et al*. (1993) found that embankments roughened by the placement of 1.0 to 1.5 meter diameter rocks along the toe of the bank appeared to have greater salmonid rearing densities for all species except underyearling steelhead. While the proposed action includes irregular placement of toe rock, the rock diameter appears undersized (6 to 24-inch diameter) to achieve desired effect. The proposed top of bank plantings are expected to provide allochthonous input in the long term and a potential seed source for eventual riprap colonization.

Short-term impacts resulting from the proposed action could occur from turbidity and debris contribution to the waterway during construction activities and storm events during construction. These effects would be largely avoided by project timing (i.e., dry season) as described above in *Effects of Proposed Action*.

1.5.3 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." Future Federal actions, including the ongoing

operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

The NMFS is not aware of any specific future non-Federal activities within the action area that would cause greater impacts to listed species than presently occurs. The NMFS assumes that future private and state actions will continue at similar intensities as in recent years.

1.6 Conclusion

After reviewing the current status of OC coho salmon, the environmental baseline for the action area, the effects of the proposed revetment construction action and the cumulative effects, the NMFS has determined that the Sheely Creek Road Slide Repair and Bank Stabilization Project, as proposed, is not likely to jeopardize the continued existence of the OC coho salmon, and is not likely to destroy or adversely modify designated critical habitat for the ESU. This finding is based, in part, on incorporation of best management practices (BMPs) into the proposed project design (i.e., ODFW in-water work window, site revegetation, no equipment in channel, and individual rock placement), but also on the following considerations: 1) The use of large woody debris to construct a wood-rock toe and placement of willow bundles and drift fences within the rock to help recruit debris from the stream as mitigation for riprap will provide limited fish cover and low velocity aquatic habitat conditions; 2) revegetation of the site will provide an allochthonous material source and assist in limiting potential detrimental water temperature affects resulting from heat collection and radiation of the rock embankment; and 3) the proposed action will not appreciably reduce the functioning of the ESU's already impaired habitats, or retard the long-term progress of impaired habitats toward properly functioning condition (PFC).

1.7 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitats, or to develop additional information. The NMFS believes the following conservation recommendations are consistent with these obligations, and therefore should be carried out by the Corps:

1. The Corps should develop guidelines to maximize ecological functions in erosion control activities. The guidelines should be built on consideration of the mechanisms and causes of bank failure based on the geometry of the bank and channel at the project site; existing riparian and aquatic habitat conditions that must be protected or mitigated by the project to protect the site's productive capacity and opportunities for restoration in the future; and the risk of bank erosion to safety, property and habitat, including the economic cost to the extent known.

2. The Corps should develop educational materials to ensure that future applicants for permits to conduct erosion control activities are aware of and, to the maximum extent possible, apply the Corps's guidelines to minimize the use of riprap.

The NMFS believes these guidelines and their use will help to reduce the adverse effects of erosion control projects on designated critical habitats. In order for the NMFS to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and their habitats, NMFS requests notification of any actions leading to the achievement of these conservation recommendations.

1.8 Reinitiation of Consultation

This concludes formal consultation on these actions in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the amount or extent of incidental take is exceeded; (2) the action is modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this Opinion; (3) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered species and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by NMFS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering. Harass is defined by NMFS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the term and conditions of this Incidental Take Statement.

2.1 Amount or Extent of Take

The NMFS anticipates that the proposed action covered by this Opinion has more than a negligible likelihood of incidental take of juvenile OC coho salmon resulting from the long-term removal of potential natural rearing habitat due to the use of riprap. Effects of actions such as

these are largely unquantifiable in the short term. The effects of these activities on population levels are also largely unquantifiable and not expected to be measurable in the long term.

Therefore, even though NMFS expects some low level of non-lethal incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as this, NMFS designates the expected level of take in terms of the extent of take allowed. Therefore, NMFS limits the area of allowable incidental take during construction to the distance from the action site downstream for a distance of 1.0 mile. Incidental take occurring beyond these areas is not authorized by this consultation.

2.2 Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species. The Corps shall:

1. Minimize the likelihood of incidental take from erosion control activities requiring streambank and shoreline protection by applying permit conditions to maximize ecological functions.

2. Minimize the likelihood of incidental take from activities involving temporary access roads, use of heavy equipment, earthwork, site restoration, or that may otherwise involve in-water work or affect fish passage by applying permit conditions to avoid or minimize disturbance to riparian and aquatic systems.

3. Ensure this biological opinion is meeting its objective of minimizing the likelihood of take from permitted activities by requiring comprehensive monitoring and reporting.

2.3. Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity.

1. To Implement Reasonable and Prudent Measure #1 (streambank protection) above, the Corps shall ensure that:

a. Use of rock and riprap is avoided or minimized.
   i. When rock must be used in conjunction with other erosion controls below bankfull elevation, class 350 metric or larger rock is preferred unless it will constrict the channel migration zone[3].
   ii. Rock will be individually placed in a way that produces an irregularly contoured face to provide velocity disruption. No end dumping will be allowed.

b. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site or be replaced with a functional equivalent.

c. Wood placement will only include complex large wood to provide functional refugia habitat for fish (e.g. root wads will not be trimmed).

d. The bankline will be revegetated using natural vegetation.

2. To implement Reasonable and Prudent Measure #2 (construction) above, the Corps shall ensure that:

   a. Project design. Alteration or disturbance of the stream banks and existing riparian vegetation will be minimized.

   b. In-water work. All work within the active channel will be completed within the ODFW approved in-water work period (July 1 - August 31).[4] Extensions must be approved by NMFS in writing.

   c. Pollution and erosion control plan. A Pollution and Erosion Control Plan (PECP) will be developed for each authorized project to prevent point-source pollution related to construction operations. The PECP will contain the pertinent elements listed below and meet requirements of all applicable laws and regulations:
      i. Methods that will be used to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
      ii. Methods that will be used to confine and remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.
      iii. A description of the hazardous products or materials that will be used, including inventory, storage, handling, and monitoring.
      iv. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response

[3] "Channel migration zone" means the area defined by the lateral extent of likely movement along a stream reach where there is evidence of active stream channel movement over the past 100 years, e.g., alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams.

[4] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000)(identifying work periods with the least impact on fish)(http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

containment and clean up measures that will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment.

v. Measures that will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.

d. Pre-construction activities. Prior to significant alteration of the action area, the following actions will be accomplished.

i. Boundaries of the clearing limits associated with site access and construction are flagged to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. A supply of erosion control materials (e.g., silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.

iii. All temporary erosion controls (e.g., straw bales, silt fences) are in-place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in-place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

e. Earthwork. Earthwork, including drilling, blasting, excavation, dredging, filling and compacting, is completed in the following manner:

i. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained from outside of the riparian area.

ii. Material removed during excavation will only be placed in locations where it cannot enter streams or other water bodies.

iii. All exposed or disturbed areas will be stabilized to prevent erosion.

(1) Areas of bare soil within 150 feet of waterways, wetlands or other sensitive areas will be stabilized by native seeding,[5] mulching, and placement of erosion control blankets and mats, if applicable, quickly as reasonable after exposure, but within 7 days of exposure.

(2) All other areas will be stabilized quickly as reasonable, but within 14 days of exposure.

(3) Seeding outside of the growing season will not be considered adequate nor permanent stabilization.

f. Heavy Equipment. Heavy equipment use will be fueled, maintained and stored as follows.

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[5] By Executive Order 13112 (February 3, 1999), Federal agencies are not authorized to permit, fund or carry out actions that are likely to cause, or promote, the introduction or spread of invasive species. Therefore, only native vegetation that is indigenous to the project vicinity, or the region of the state where the project is located, shall be used.

i. Vehicle staging, maintenance, refueling, and fuel storage areas will be a minimum of 150 feet horizontal distance from any stream.

ii. All vehicles operated within 150 feet of any stream or water body will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation.

iii. When not in use, vehicles will be stored in the vehicle staging area.

g. Site restoration. Site restoration and clean-up, including protection of bare earth by seeding, planting, mulching and fertilizing, is done in the following manner.

i. Disturbed areas will be planted with native vegetation specific to the project vicinity or the region of the state where the project is located, and will comprise a diverse assemblage of woody and herbaceous species.

ii. Plantings will be arranged randomly within the revegetation area.

iii. No herbicide application will occur as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

iv. No surface application of fertilizer will be used within 50 feet of any stream channel as part of this permitted action.

v. Fencing will be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

vi. Plantings will achieve an 80 percent survival success after three years.

(1) If success standard has not been achieved after 3 years, the applicant will submit an alternative plan to the Corps. The alternative plan will address temporal loss of function.

(2) Plant establishment monitoring will continue and plans will be submitted to the Corps until site restoration success has been achieved.

3. To Implement Reasonable and Prudent Measure #3 (monitoring and reporting), the Corps shall ensure that:

a. Within 30 days of completing the project, the applicant will submit a monitoring report to the Corps and NMFS describing the applicant's success meeting their permit conditions. This report will consist of the following information.

i. Project identification.

(1) Permit number;

(2) applicant's name;

(3) project name;

(4) project location by 5th field hydrological unit code (HUC) and latitude and longitude;

(5) starting and ending dates for work performed under the permit; and

(6) the Corps contact person.

ii. Pollution and erosion control. A summary of any pollution and erosion control inspection reports, including the downstream extent and duration of any turbidity plume, descriptions of any failures experienced with

erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

iii. Site restoration. Documentation of the following conditions:
   (1) Finished grade slopes and elevations.
   (2) Log and rock structure elevations, orientation, and anchoring, if any.
   (3) Planting composition and density.
   (4) A plan to inspect and, if necessary, replace failed plantings and structures for a period of five years.

iv. A narrative assessment of the project's effects on natural stream function.

v. Photographic documentation of environmental conditions at the project site before, during and after project completion.
   (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
   (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
   (3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

b. The monitoring report will be submitted to:

National Marine Fisheries Service
Oregon Habitat Branch
Attn: OSB2000-0175
525 NE Oregon Street, Suite 500
Portland, OR 97232

c. If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the National Marine Fishery Service Law Enforcement Office, located at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360/418-4246. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the Essential Fish Habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NMFS on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: 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 (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;
- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

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

3.4 Proposed Actions

The proposed action is detailed above in section 1.2 of this document. The action area includes a reach of the Nehalem River from approximately river mile 93 to river mile 91.5. This area has been designated as EFH for various life stages of chinook salmon and coho salmon.

3.5 Effects of Proposed Action

As described in detail in section 1.5 of this document, the proposed activities may result in detrimental short- and long-term adverse effects to a variety of habitat parameters. These impacts include: water quality (temperature, sediment, and chemical contamination), gravel recruitment, LWM recruitment, stream hydraulics, and displacement of rearing juveniles.

Effect #1: Temperature - Water temperatures may be degraded as a result of construction activities. NMFS does not expect the proposed action in and of itself will result in a measurable temperature increase in the river, but will contribute to any cumulative effect of riparian vegetation removal and streambank hardening within the watershed.

Effect #2: Turbidity - Excavation of a toe trench in the wetted channel will result in short-term releases of sediment. An increase in turbidity can impact fish and filter-feeding macro-invertebrates downstream of the work site.

Effect #3: Chemical Contamination - As with all construction activities, accidental release of fuel, oil, and other contaminants may occur.

Effect #4: Gravel Recruitment - Armoring streambanks removes a potential gravel source from the stream system, and typically results in gravel recruitment occurring at another site. NMFS does not expect that the proposed action in and of itself will result in a measurable loss in gravel production, but will contribute to any cumulative effect of bank hardening within the watershed.

Effect #5: Large Woody Material Recruitment - A minor loss of LWM recruitment potential will occur where bank hardening will prevent natural capture of woody material.

Effect #6: Stream Hydraulics - Simplification of the embankment may result in velocity acceleration and subsequent relocation of erosion to another site, either upstream or downstream. Simplification also reduces refugia sites for fish, which assist in predator avoidance and maintenance of position during high flow events.

Effect #7: Habitat Use - Peters *et al.* (1998) found that densities of juvenile coho salmon were generally reduced at riprapped sites when compared to areas containing large woody debris or undercut banks.

3.6 Conclusion

NMFS believes that the proposed action may adversely affect the EFH for Pacific salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the Corps, all Conservation Recommendations outlined above in section 1.7 and all of the Reasonable and Prudent Measures and the Terms and Conditions contained in sections 2.2 and 2.3 and the conservation recommendations in section 1.7 are applicable to salmon EFH. Therefore, NMFS incorporates each of those measures here as EFH recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NMFS after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NMFS, the agency must explain its reasons for not following the recommendation.

3.9 Consultation Renewal

The Corps must reinitiate EFH consultation with NMFS if either action is substantially revised or new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on the best scientific and commercial data available. This section identifies the data used in developing this Opinion.

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