UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
525 NE Oregon Street
PORTLAND, OREGON 97232-2737

Refer to:
2002/00478

July 22, 2002

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation on the Clover Creek Project, South Umpqua River, Douglas County, Oregon (Corps No. 2002-00287).

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) for the Clover Creek Project, Douglas County, Oregon. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch)*. Pursuant to section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries 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 (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 concluded that the proposed action may adversely affect designated EFH for coho salmon and chinook salmon (*O. tshawytscha*). 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 after receiving an EFH conservation recommendation.

Questions regarding this letter should be directed to Ken Phippen of my staff in the Oregon Habitat Branch at 541.957.3385.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

cc: Dan Carey, ODSL
Jim Brick, ODFW
Steve Wille, USFWS
Craig Tuss, USFWS

Endangered Species Act - Section 7 Consultation

&

Magnuson-Stevens Act

Essential Fish Habitat Consultation

BIOLOGICAL OPINION

Clover Creek Project, Clover Creek, Douglas County, Oregon
(Corps No. 2002-00287)

Agency:	U.S. Army Corps of Engineers
Consultation Conducted By:	NOAA Fisheries, Northwest Region
Date Issued:	July 22, 2002
Issued by:	Russell M Strach for D. Robert Lohn Regional Administrator
Refer to:	**2002/00478**

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1. ENDANGERED SPECIES ACT

1.1 Background

On May 7, 2002, National Marine Fisheries Service (NOAA Fisheries) received a request for informal consultation under section 7 of the Endangered Species Act (ESA) on issuance of a permit under Section 404 of the Clean Water Act. The Oregon Department of Fish and Wildlife (ODFW) proposes to replace one culvert, construct a culverted road crossing, and construct a low water ford. NOAA Fisheries has reviewed the materials provided by the U.S. Army Corps of Engineers (Corps), a cover letter and the application to the Corps, conducted a site visit (May 16, 2002) with the ODFW, and reviewed fish survey data collected by ODFW (May 16, 2002). A letter of nonconcurrence was issued June 12, 2002, because NOAA Fisheries concluded Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*) juveniles are reasonably certain to occur within the project area during the in-water work window, and therefore, implementation of this project was "likely to adversely affect" (LAA) OC coho salmon.

In Oregon coastal streams north of Cape Blanco, including Umpqua River basin drainages such as Clover Creek, NOAA Fisheries listed OC coho salmon under the ESA as threatened on August 10, 1998 (63 FR 42587). Protective regulations for OC coho salmon were issued by NOAA Fisheries under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402.

NOAA Fisheries prepared this biological opinion (Opinion) to address affects of the proposed project on this species. The objective of this Opinion is to determine whether the subject action is likely to jeopardize the continued existence of the above listed species.

1.2 Proposed Action

The ODFW proposes to replace an existing culvert and construct a boulder weir at river mile (RM) 1.6 of Clover Creek (Site 1), a tributary to the North Umpqua River. A new culverted road and boulder weir is proposed at RM 1.95 (Site 2) of Clover Creek. They also propose to construct a low water livestock crossing at RM 0.8 (Site 3) of an unnamed tributary of Clover Creek.

<u>Site 1</u>
The Site 1 project will consist of removing the existing culvert using a track mounted excavator, excavate three feet below the culvert's existing level, discharge a crushed aggregate bedding material, install a 171- by 110-inch pipe arch culvert 60-feet long with bottom baffles to trap gravel, pour a concrete slurry around the culvert, backfill with fill material, and install bank protection riprap on the upstream and downstream sides of the culvert. To create backwater, a three-foot deep and six-foot wide boulder weir will be constructed downstream. The weir will

be keyed three feet into the banks on each side. Approximately 235 cubic yards (cy) of fill will be required of which 108 cy are below the ordinary high water (OHW) line.

Site 2
Activity at Site 2 will consist of using a track mounted excavator and compacting equipment to excavate the stream bed approximately 2.5 feet below its existing level, discharge a crushed aggregate bedding material, install a 171- by 110-inch pipe arch culvert 70-feet long with bottom baffles to trap gravel, pour a concrete slurry around the culvert, backfill with fill material, and install bank protection riprap on the upstream and downstream sides of the culvert. To create backwater, a three-foot deep by six-foot wide boulder weir will be constructed downstream. The weir will be keyed three feet into the banks on each side. Approximately 826 cy of fill will be required, with 103 cy below the OHW line. This crossing will provide vehicle and livestock crossing.

Site 3
Activity at Site 3 will consist of using a track mounted excavator or bulldozer to excavate the stream channel to approximately one foot below the current elevation. Approximately 31 cy of rock and gravel will be placed in a 12- by 30-foot area of the stream. This is a traditional livestock crossing location that will be hardened to improve channel stability and reduce erosion.

1.3 Biological Information

Although limited data are available to assess population numbers or trends, NOAA Fisheries believes that all OC coho salmon stocks comprising the OC coho salmon evolutionarily significant unit (ESU) are depressed relative to past abundance. The OC coho salmon ESU is identified as all naturally-spawned populations of coho salmon in coastal streams south of the Columbia River and north of Cape Blanco (60 FR 38011, July 25, 1995). Biological information for OC coho salmon can be found in species status assessments by NOAA Fisheries (Weitkamp *et al.* 1995) and by ODFW (Nickelson *et al.* 1992).

Abundance of wild OC coho salmon spawners in Oregon coastal streams declined from 1965 to 1975, and have fluctuated at a low level since then (Nickelson *et al.* 1992). Spawning escapements for this ESU may be less than 5 % of that available in the early 1900s. Contemporary production of OC 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 pre-harvest 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).

The project is located at different three sites in the Clover Creek drainage, a tributary of the North Umpqua River, Douglas County, Oregon. OC coho salmon enter the Umpqua River system from September through February, and migrate into upriver tributaries. Spawning typically occurs from late November through early February, depending on the location within

the basin. For this area, OC coho salmon are typically observed spawning near the end of November through early January. Smolt migration extends from early April through July, but the peak is typically mid-April through mid-May. This is usually dependent on water temperatures (Kruzic 1998). Juvenile coho salmon will spend one year in freshwater prior to smolting. These juveniles are typically seeking thermal refugia and cover in smaller tributary streams. Sampling conducted May 16, 2002, by ODFW collected OC coho salmon fry in pools below and above Site 1. A total of 28 OC coho salmon fry were collected from eight pools, with one pool being too deep and large to estimate fish numbers.

Freshwater habitat incorporates important components of the environment, such as water, abiotic and biotic physical factors, substrates, stream channel structures, and adjacent riparian areas. Areas adjacent to a stream that provide shade, sediment, nutrient or chemical regulation, streambank stability, and input of LWD or organic matter are important components to OC coho salmon habitat. These project sites are located in Clover Creek, which provides spawning and rearing habitat for OC coho salmon. The previous habitat factors, in addition to instream habitat elements such as water quality, pools, riffles, suitable sized substrate, and migration corridors, are important to the continued survival of OC coho salmon.

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 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of defining the biological requirements of the listed species, and evaluating the relevance of the environmental baseline to the species' current status. Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the continued existence of the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action. For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' considers the extent to which the proposed action impairs the function of essential biological and ecological elements necessary for juvenile and adult migration, spawning, and rearing of the listed and proposed species under the existing environmental baseline.

1.4.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA to listed salmon is to define the biological requirements of the species most relevant to each consultation. The NOAA Fisheries also considers the current status of the listed species, taking into account population

size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its 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 a broad range of 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

Regulations implementing section 7 of the Act (CFR 402.02) define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the action area. The environmental baseline also includes 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.

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 disturbance, impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian and instream habitat modifications. Indirect effects may occur throughout the watershed where actions lead to additional activities or affect ecological functions contributing to stream degradation. For this consultation, the action area includes the affected streambed, streambank, adjacent riparian zone, and aquatic areas of Clover Creek 200 feet upstream and downstream of Sites 1 and 2. The activities occurring at Site 3 are expected to have less than a negligible chance of reaching downstream occupied habitat. The action area around Site 3 is limited to the immediate site of disturbance.

Clover Creek is currently listed on the Oregon State's list of water quality limited streams for temperature (ODEQ 2001). The current baseline conditions are degraded and considered not properly functioning for many indicators of the Matrix of Pathways and Indicators (NMFS 1996). Site specific surveys have not been conducted; however, observations during the site visit support concern for habitat factors such as riparian condition, large wood, substrate, nutrients, off-channel habitat, pool character and quality, streambank condition and floodplain connectivity. Clover Creek is an incised and confined channel that is currently approximately

eight feet below the historic elevation. Due to this downgrade and disconnection from the floodplain and adjacent meadows, much of the stream channel is intermittent during low flows. Deep pools maintained by hyporheic flows provide low flow refugia for OC coho salmon. In addition, the culvert at Site 1 is creating a not properly functioning condition for migrating adult and juvenile coho salmon due to the barrier created by the pipe outfall elevation.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Action

Direct harm may occur to juvenile OC coho salmon due to proposed project in-water activities. Using mechanized machinery in the water has the potential for disturbing juvenile OC coho salmon and causing displacement of these fish from the immediate work area. Additional risk is possible due to turbidity increases, impingement of individual fish on equipment, and exposure to toxic substances. The handling of fish while salvaging them from the work area also poses a risk for direct harm.

Although the proposed action did not describe salvaging fish, it will be necessary to remove juvenile OC coho salmon from the pools directly above and below the culvert work sites (Sites 1 and 2). Coho salmon fry have been documented in the pools above and below Site 1, and it is assumed they could occur at Site 2. If the project was implemented without the removal of the coho salmon fry, it is highly probable that all the fish inhabiting the pools immediately adjacent to the culvert would die. During low flows the pools will likely be isolated, therefore the fish can not evade the excavation equipment or the extreme water quality conditions created by excavation. During the on-site visit (May 16, 2002) the applicant proposed to remove the fish prior to implementation and place them downstream of the activities. Although handling the fish is justifiable and necessary to reduce the potential for killing fish, the proposed handling of fish through electrofishing or seining also poses a risk of injury and mortality. In addition to handling them, placing the fish in downstream pools does create risk from the potential downstream movement of turbidity and hazardous materials. For this reach of Clover Creek, suitable upstream pools are limited, therefore the option of moving salvaged fish upstream is not available.

Fish removal activities would be in accordance with NOAA Fisheries fish handling guidelines. Any listed fish removed from the isolated work area would experience high stress with the possibility of up to a 5 % delayed mortality rate depending on rescue method. Water temperatures are an important factor in estimating stress and delayed mortality. Higher water temperatures increase mortality rates due to the higher stress levels the fish are experiencing and potentially lower dissolved oxygen levels. If the substrate consists of silts and clays, the disturbance of this material can create very high turbidity conditions and increase cumulative effects to the handling stress. It is expected that any salvage activities will occur early in the morning in order to reduce the stress from high water temperatures. Any fish that are missed during the salvaging operation are certain to die due to the excavation activities.

In addition to handling, if Clover Creek is not intermittent at the time of construction, sediment laden water created within isolated work areas could escape and impact the downstream aquatic environment. Excavation of the stream channel is expected to result in significant increases in turbidity that may also result in the displacement of individuals. If the pools are unconnected, downstream effects of turbidity would be limited to adjacent pools, and confined to a short distance downstream to project-related silt fences during thunderstorm events. If this particular year provides continuous surface flow, the potential affected area may increase to 100 feet. Silt fences are expected to limit turbidity levels to within 100 feet downstream of each site, should this occur. Turbidity beyond this distance is expected to be negligible.

Disturbance and harassment of any individual juvenile OC coho salmon remaining at the site after removal, due to heavy equipment, is expected to be limited to Sites 1 and 2, as well as 200 feet upstream and downstream of these sites. Any juveniles outside of this described area are not expected to be affected by the equipment operation. The extent to which disturbance effects fish will be determined by surface flow. If surface water is present and allows the fish to move upstream or downstream from the activity, then this displacement of fish transfers the immediate site disturbance to more distant reaches. This displacement is not expected to be transferred any further than a few pools upstream or downstream of the project site (200 feet total area). If water flow conditions have isolated the pools, then actual disturbance will likely be limited to sight distance from the equipment operation. Transferring salvaged fish to downstream pools will also effect those fish within the receiving pool by increasing competition. Carrying capacity of the pool may even be exceeded. Site 3 is located well upstream of occupied habitat and therefore will not cause any disturbance to coho salmon.

Operation of excavators requires the use of fuel, hydraulic fluid and lubricants, which, if spilled into the bed or channel of a water body or into the adjacent riparian zone of a water body during project construction, could injure or kill aquatic organisms. Hazardous material spills, fuel spills, and equipment failure require immediate control in order to limit the extent of impacts. This problem must be addressed through proactive practices, such as sorbent booms and other control measures available during implementation. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain polycyclic aromatic hydrocarbons (PAHs) which can cause acute toxicity to salmonids at high levels of exposure and can also cause chronic lethal as well as acute and chronic sublethal effects to aquatic organisms (Neff 1985). In addition to the proactive measures, post-accident measures will include removal of contaminated soil.

Post-project erosion can result in a chronic sediment source. Disturbance of the already erosive bank may increase erosion without proper vegetation recovery and monitoring. The rock weir can develop erosional flow patterns at the near banks. Following standard designs (Rosgen 2001) to focus flows in the channel center will reduce, but not eliminate, this identified risk.

Indirect effects may persist over the long term due to habitat alteration. The essential features potentially affected by this project are substrate, floodplain connectivity, water quality (turbidity, hazardous substances), cover/shelter, food, and space. Alteration of Site 1 may alter the

upstream and downstream pools developed by the culvert. This limited reduction in pool depth may affect cover/shelter and space. Providing better access to upstream pools by increasing fish passage will off-set this site level reduction. The Site 2 activities will make changes in the current habitat conditions due to this new culvert and new livestock stream crossing. Site level changes will include impacts to potential riparian vegetation growth within the foot print of the fill material, although these affects are expected to be minimal. Maintenance of both of these culverts will impede channel morphology evolution. Stream channels that become incised follow a typical recovery process of widening and redevelopment of a channel and floodplain complex within the old stream channel (Leopold *et al.* 1964). Any new or existing culverts placed in an incised channel implies a commitment to maintaining the channel width at the present width. Site 3 is located upstream of coho salmon habitat and any downstream effects of this action are not expected to reach coho salmon and occupied habitat. Effects of this Site 3 on coho salmon forage (macroinvertebrates) or habitat parameters is not expected to transfer downstream and affect coho salmon.

Stream channel alterations due to the rock weirs at Sites 1 and 2 are possible. These alterations may include a weir-caused gradient change. The applicant recognizes this potential problem by proposing to key the weirs three feet into the bank to harden the erosion points. Monitoring of these sites and adaptive adjustments to stream channel response is necessary to ensure limiting erosion potential. These adaptive adjustments would be determined if the monitoring indicates accelerated streambank erosion is occurring and may also require further consultation.

Beneficial effects of this action will occur at Site 1. The existing culvert is an OC coho salmon migration barrier and the replacement is expected to minimize this problem. At this site, due to degraded channel conditions, it is important to provide both upstream and downstream fish passage while water is in the stream. As the water flows become subsurface late in the summer, juvenile coho salmon must be able to move upstream or downstream to refugia pools. In addition to fish passage improvements, riparian habitat and future shade potential will be improved by part of the project. These culvert placements are part of a larger project that will include the planting of approximately 3.5 miles of Clover Creek's streambank with 8,000 trees. These trees will include Douglas-fir, ponderosa pine, incense cedar, big-leaf maple, ash, alder, willow, and oak. Riparian fencing will protect the riparian vegetation and stream channel from livestock grazing.

1.5.2 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." Other activities within the watershed have the potential to impact fish and habitat within the action area. Future federal actions, including the

ongoing operation of land management activities are being (or have been) reviewed through separate section 7 consultation processes.

Non-federal activities within the action area are expected to slightly increase in the near future. Although there is a projected 34 % increase in human population over the next 25 years in Oregon (ODAS 1999), the area upstream of this site is not expected to follow this rapid population growth. Surrounding uplands are agricultural land, small wood lot owners, and industrial timber land. Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, at similar levels.

1.6 Conclusion

After reviewing the current status of OC coho salmon, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, NOAA Fisheries has determined that the Clover Creek Project, as proposed, is not likely to jeopardize the continued existence of OC coho salmon. This finding is based, in part, on incorporation of the project design criteria into the proposed project design, (*i.e.*, ODFW in-water work window, site revegetation, sediment and hazardous materials control, and knowledgeable personnel handling fish), and the following: (1) A fish migration barrier will be eliminated and replaced with a culvert providing passage; (2) site level impacts to the riparian vegetation, especially that of Site 2, will be off-set by the planting of 3.5 miles of streambank with 8,000 trees (nine species) with commensurate riparian and aquatic long-term benefits; (3) the upstream hardened crossing is expected to have only site level changes to the stream character and would not effect occupied downstream habitat; (4) revegetation of the banks and fencing of the riparian area will result in the long-term recovery of riparian resources; and (5) 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). Thus, the proposed action is not expected to impair properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU level.

1.7 Reinitiation of Consultation

This concludes formal consultation on this action 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; 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 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species by annoying it 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 take of listed animal species that results from, but is not the purpose of, the federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of 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 prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

2.1 Amount or Extent of Take

NOAA Fisheries anticipates that the proposed action covered by this Opinion is reasonably certain to result in the incidental take of juvenile OC coho salmon resulting from the physical handling and transfer during salvage work from the pools, disturbance and displacement from the use of equipment in the stream channel, and impacts to individuals due to elevated turbidity levels and potential introduction of hazardous materials. 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 NOAA Fisheries 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 NOAA Fisheries to estimate a specific amount of incidental take to the species itself. In instances such as this, NOAA Fisheries designates the expected level of take in terms of the extent of take allowed. Therefore, NOAA Fisheries limits the area of allowable incidental take during construction to the distance from the action site downstream for a distance of 200 feet and upstream of the site for a distance of 200 feet. Incidental take occurring beyond these areas is not authorized by this consultation.

NOAA Fisheries expects that as many as 5 % of the juvenile OC coho salmon present in the project area could be taken (lethal) as a result of salvaging OC coho salmon juveniles from the pools through electrofishing or seining. NOAA Fisheries estimates that in most projects such as this, not more than one or two individual mortalities will occur. Loss due to failure to salvage the fish from the pools prior to excavation will also cause some minor additive factor. It is expected one or two individuals will be missed during the salvage operation. In total, lethal take of OC coho salmon is not expected to exceed five juvenile fish. In this Opinion, NOAA Fisheries has determined that this level of anticipated take is not likely to result in jeopardy to the species. As noted above, the Corps, is required to reinitiate consultation if this level of take of the listed species is exceeded.

2.2 Reasonable and Prudent Measures

NOAA Fisheries 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.

1. Minimize the likelihood of incidental take associated with impacts to riparian and instream habitats by avoiding or replacing lost riparian and instream functions.

2. Minimize the likelihood of incidental take from construction activities in or near watercourses by implementing pollution and erosion control measures.

3. Minimize the likelihood of incidental take associated with instream work by restricting work to recommended in-water work periods.

4. Minimize the likelihood of incidental take associated with the capture and handling of individual OC coho salmon juveniles by following accepted guidelines.

5. Monitor the effectiveness of the proposed conservation measures in minimizing incidental take and report to NOAA Fisheries.

2.3 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement Reasonable and Prudent Measure #1 (instream habitat function) the Corps shall ensure:
    a. Flagged boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands, and other sensitive sites beyond the flagged boundary.
    b. Complete site restoration and clean up, including protection of bare earth by seeding, planting, and mulching in the following manner:
        i. Plant disturbed areas with native vegetation specific to the project vicinity or the region of the state where the project is found, using a diverse assemblage of woody and herbaceous species.
        ii. Do not apply herbicide as part of this permitted action.
        iii. Achieve an 80 % survival success of planting after three years.
        iv. Monitor establishment of planting until 80 % survival has been achieved.
        v. If success standard has not been achieved after three years, prepare an alternative plan to address temporal loss of function.

2. To implement Reasonable and Prudent Measure #2 (construction) the Corps shall ensure that a Pollution and Erosion Control Plan (PECP) is developed for the project to prevent point-source pollution related to construction operations, containing all of the pertinent elements listed below, and meeting requirements of all applicable laws and regulations.
    a. Describe methods that will be used to prevent erosion and sedimentation associated with access roads, construction sites, equipment and material storage sites, fueling operations and staging areas. Fuel, maintain and store heavy equipment as follows:
        i. Place vehicle staging, maintenance, refueling, and fuel storage areas at least 150 feet horizontal distance from any stream.
        ii. Inspect all vehicles operated within 150 feet of any stream or water body daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected before the vehicle resumes operation.
        iii. When not in use, store vehicles in the vehicle staging area.
    b. Describe hazardous products or materials that will be used, including procedures for inventory, storage, handling, and monitoring.
    c. Develop a spill containment and control plan with these components: Notification procedures; specific clean up and disposal instructions for different products; quick response containment and clean up measures; proposed methods for disposal of spilled materials; and employee training for spill containment.
    d. Install a sorbant boom downstream of the project site prior to project implementation and maintain the boom throughout the in-water work phase.
    e. Stockpile a supply of erosion control materials (*e.g.*, silt fence and straw bales) on-site to respond to sediment emergencies. Use sterile straw or hay bales when available to prevent introduction of weeds.
    f. Install all temporary erosion controls (*e.g.*, straw bales, silt fences) downslope of project activities within the riparian area. Keep them in-place and maintained throughout the contract period, and until permanent erosion control measures are effective.
    g. Where fertilizer can wash into the river, fertilizer should not be used within 50 feet of the river.

3. To implement Reasonable and Prudent Measure #3 (instream work) the Corps shall ensure that:
    a. All in-water work will be completed within the ODFW approved in-water work period (July 1 - September 15). Extensions of the in-water work period must be approved in advance by NOAA Fisheries in writing.

4. To implement Reasonable and Prudent Measure #4 (isolation of in-water work area and proper fish handling methods) the Corps shall ensure that:
    a. During in-water work (work within the ordinary high water mark) if the project involves either significant channel disturbance or use of equipment within the wetted channel, the work area is well isolated from the active flowing stream

within a cofferdam (made out of sand bags, sheet pilings, inflatable bags, etc.) or similar containment structure, to minimize the potential for sediment entrainment. Furthermore, no ground or substrate disturbing action will occur within the ordinary high water mark 120 feet upstream of potential spawning habitat as measured at the thalweg without isolation of the work area from flowing waters. After the containment structure is in place, any fish trapped in the isolation pool will be removed by a permitted ODFW biologist prior to de-watering, using NOAA Fisheries guidelines.

b. Any water intake structure authorized under this Opinion must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries fish screen criteria.
   i. Water pumped from the work isolation area will be discharged into an upland area providing over-ground flow before returning to the creek. Discharge will occur so that it does not cause erosion.
   ii. Discharges into potential fish spawning areas or areas with submerged vegetation are prohibited.

c. Fish Salvage.
   i. Prior to, and intermittently during, pumping attempts will be made to salvage and release fish from the work isolation area as is prudent to minimize risk of injury. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:
      (a). Seining will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.
      (b). ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary to prevent the added stress of an out-of-water transfer.
      (c). Seined fish must be released as near as possible to capture sites (preferably a large pool isolated from the effects of this project).
      (d). The transfer of any ESA-listed fish from the applicant to third-parties other than NOAA Fisheries personnel requires written approval from NOAA Fisheries.
      (e). The applicant must obtain any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities.
      (f). The applicant must allow the NOAA Fisheries, or its designated representative, to accompany field personnel during the seining activity, and allow such representative to inspect the applicant's seining records and facilities.

(g). A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions prior to and following placement and removal of barriers; the means of fish removal; the number of fish removed by species; the condition of all fish released, and any incidence of observed injury or mortality.

ii. If the fish salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NMFS 1998):

(a). Electrofishing may not occur in the vicinity of listed adults in spawning condition or in the vicinity of redds containing eggs.

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

(c). A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment must train the crew. The crew leader's experience must be documented and available for confirmation; such documentation may be in the form of a logbook. The training must occur before an inexperienced crew begins any electrofishing; it must also be conducted in waters that do not contain listed fish.

(d). Measure conductivity and set voltage as follows:

Conductivity (umhos/cm)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

(e). Direct current (DC) must be used at all times.

(f). Each session must begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500us and do not exceed 5 milliseconds. Pulse rate should start at 30Hz and work carefully upwards. In general, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.

(g). The zone of potential fish injury is 0.5m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.

(h). The monitoring area must be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.

(i). Crew must carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling must be terminated if injuries occur or abnormally long recovery times persist.

(j). Whenever possible, a block net must be placed below the area being sampled to capture stunned fish that may drift downstream.

(k). The electrofishing settings must be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, together with observations on fish condition, will improve technique and form the basis for training new operators.

5. To implement Reasonable and Prudent Measure #5 (monitoring), the Corps shall ensure that:

a. Comprehensive monitoring will occur and a post project report prepared to ensure that these terms and conditions meet their objective of minimizing the likelihood of adverse effects to OC coho salmon and their habitat.

i. Submit a report to NOAA Fisheries within 120 days of completing the project. Describe the Corps's success meeting conservation recommendations above. Include the following information:

(a). Project identification.

(b). Project name.

(c). Starting and ending dates of work completed for this project.

(d). Corps contact person.

ii. A summary of all pollution and erosion control inspection reports, including 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. Documentation of the following conditions:

(a). Finished grade slopes and elevations.

(b). Rock weir structure elevations, orientation, and anchoring, if any.

(c). Planting composition and density.

(d). A plan to inspect and, if necessary, replace failed plantings and structures as required in 1(e).

iv. A narrative assessment of the effects of the project and compensatory mitigation on natural stream function.

v. Photographic documentation of environmental conditions at the project site before, during and after project completion.

vi. Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post

construction. These photo points will include points associated with the rock weirs.

vii. 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.

b. Submit monitoring reports to:

NOAA Fisheries
Oregon Habitat Branch, Habitat Conservation Division
Attn: 2002/00478
525 NE Oregon Street, Suite 500
Portland, Oregon 97232-2778

c. If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the NOAA Fisheries Office of Law Enforcement, at the Roseburg Field Office, 2900 NW Stewart Parkway, Roseburg, Oregon 97470, at 541.957.3388. Care should 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 disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of essential fish habitat (EFH) descriptions in federal fishery management plans. In addition, the MSA requires federal agencies to consult with NOAA Fisheries 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 NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;
- NOAA Fisheries 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 NOAA Fisheries provide a detailed response in writing to NOAA Fisheries 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 NOAA Fisheries, 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 NOAA Fisheries is required by federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook salmon , coho salmon, 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.

3.3 Proposed Action

The proposed action is detailed above in section 1.2 of this document. The action area includes several reaches of Clover Creek, a tributary of the North Umpqua River. This area has been designated as EFH for various life stages of chinook salmon and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 1.5 of this document, the proposed activity may result in detrimental short- and long-term adverse effects to a variety of habitat parameters. These include:

1. Turbidity - Excavation of a culvert, construction of a crossing with a new culvert, and construction of a ford 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.

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

3. Stream Hydraulics -The placement of culverts in the stream will have an adverse affect on the long-term movement of water through the stream channel. Placement of two rock weirs may affect stream flow dynamics, potentially creating adverse channel adjustments.

4. Riparian Habitat Loss -The installation of a new culvert and stream crossing will result in the elimination of additional riparian vegetation within the "footprint" of the culvert and crossing fill.

3.5 Conclusion

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

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NOAA Fisheries 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 ODFW and all of the reasonable and prudent measures and terms and conditions contained in sections 2.2 and 2.3 are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.7 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 NOAA Fisheries 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 NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.8 Supplemental Consultation

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

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