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:
2003/001436

January 21, 2004

Robert E. Willis
Chief, Environmental Resources Branch
Department of the Army
Portland District, Corps of Engineers
Post Office Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on the Elk Creek Dam Interim Trap and Haul Project, Rogue River, Jackson County, Oregon

Dear Mr. Willis:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of constructing and implementing fish passage impreovements and continued Federal operation of the Elk Creek Dam Interim Trap and Haul Project, Jackson County, Oregon through fiscal year 2008 by the U.S. Army Corps of Engineers. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch)*, or destroy or adversely modify designated critical habitat. Pursuant to section 7(b)(3)(A) of the ESA, NOAA Fisheries has included reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize incidental take associated with this action.

An essential fish habitat (EFH) consultation is also enclosed pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). As required by section 305(b)(4)(A) of the MSA, the enclosed consultation includes conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As further described in the enclosed consultation, section 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.

If you have any questions regarding this consultation please contact Chuck Wheeler of my staff in the Southwest Oregon Habitat Branch of the Oregon State Habitat Office at 541.957.3379.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Craig Tuss, USFWS
Bernard Klatte, COE
Mary Hanson, ODFW

Endangered Species Act - Section 7 Consultation Biological Opinion

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

Elk Creek Dam Interim Trap and Haul Project,
Rogue River, Jackson County, Oregon

Agency:	U.S. Army Corps of Engineers
Consultation Conducted By:	National Marine Fisheries Service, Northwest Region
Date Issued:	January 21, 2004
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2003/01436**

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1. INTRODUCTION

1.1 Background

On October 22, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a biological assessment (BA) from the Portland District of the U.S. Army Corps of Engineers (Corps) along with a letter requesting formal consultation on the effects of the Elk Creek Dam Interim Trap and Haul Project. The request was made pursuant to sections 7(a)(2) of the Endangered Species Act (ESA) and 305(b)(2) of the Magnuson-Stevens Fishery Conservation Act (MSA). The proposed action is to continue current trap and haul procedures while designing a new trap and haul facility. Besides describing the proposed operation and its likely effects on aquatic resources, the Corps found that continued operation is likely to adversely affect Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), an ESA-listed species, and its designated essential fish habitat.

Congress directed the Corps to construct the Elk Creek Dam in the Supplemental Appropriations Act of 1985. Elk Creek Dam is on Elk Creek, approximately 1.7 miles upstream of the confluence with the Rogue River in Jackson County, Oregon. Legal actions were initiated by a number of plaintiffs to halt the project before construction began, in which it was claimed that violations of the National Environmental Policy Act (NEPA) had occurred. The U.S. District Court denied the plaintiffs' motion to enjoin the project in January 1986, and construction of the dam began later that month. The Ninth Circuit Court of Appeals overturned the District Court's decision in 1987, and directed the District Court to place an injunction against completion of the project based on their finding that the project's NEPA documentation was inadequate. Construction was suspended in 1988 as a result. The dam was completed to 83 feet by that time, or about one-third of its design height.

From 1988 through 1995, the Corps conducted the additional NEPA studies required to remove the injunction against completion of the project. In 1995, the Ninth Circuit Court issued a decision requiring additional NEPA review before the injunction could be lifted. The Corps notified Congressional Appropriations Committees in November 1995, that it would not perform the additional studies necessary to remove the injunction against completion of the project. Instead, the Corps informed Congress that it would evaluate more cost-effective and biologically sound options for long-term management of the project in an uncompleted state. A primary goal of managing the project was determined to be provision of safe fish passage upstream and downstream of the structure.

As part of the original construction of the main dam, a temporary fish collection facility was constructed by the Oregon Department of Fish and Wildlife (ODFW) approximately 800 feet downstream of the dam. The facility was to be used for trapping and transporting anadromous fish from below the face of the dam to the Cole Rivers Hatchery following construction of the project. It was anticipated that the trap would be needed for approximately five years to collect wild fish that were returning to the dam. At the end of that period, the wild fish would have been

extirpated in Elk Creek and replaced with hatchery fish, as part of the Corps' planned mitigation program.

During a three-year period (1989 to 1991) immediately after the suspension of construction, few juvenile or adult anadromous salmonids were observed in areas above the partially completed Elk Creek Dam even though several hundred adults were observed in the tailrace below the dam. These observations increased the concern that few adults were getting by the dam. In response, weirs were installed in the diversion tunnel in 1991, to provide resting areas for migrating adults in an attempt to improve upstream passage. In the fall of 1992, after continued concerns about the ability of adults to pass through the diversion tunnel, the Corps funded the ODFW to trap and haul adult fish from the fish collection facilities to above Elk Creek Dam.

As part of the collection facility, a fish weir was installed as a temporary structure. However, it is not 100% effective in blocking adult salmon from passing upstream. For example, if the weir plugs in medium to high flow events, the flow moves over the weir crest and creates opportunities for adults to pass. Fish that proceed upstream must pass through a diversion tunnel in the dam face to spawn. The tunnel had been constructed to divert water temporarily until the dam was completed. Some minor upstream fish passage occurs through the tunnel, but it appears to block most fish movement.

1.2 Consultation History

In November 1997, the Corps began consultation with NOAA fisheries under section 7(a)(2) of the ESA on the specific effects of construction of a fish passage corridor, which included removing a section of the dam (notching). A BA was submitted to NOAA fisheries on January 6, 1998, that evaluated the effects of construction activities on SONC coho salmon and proposed critical habitat. NOAA fisheries subsequently prepared a biological opinion (Opinion) dated February 24, 1998, in which it was concluded that construction and related activities associated with the proposed partial removal of the dam was not likely to jeopardize the continued existence of the SONC coho salmon, or result in the destruction or adverse modification of critical habitat proposed at that time for SONC coho salmon. Reasonable and prudent measures were identified that included specific monitoring activities during and after the construction phase.

Construction of the fish passage corridor did not occur in 1998 because of the Corps' inability to obtain sufficient funding. The Corps then consulted on the effects of four fish passage alternatives for long-term fish passage at Elk Creek Dam, on which a BO was issued January 23, 2001, by NOAA Fisheries. Three of the four passage alternatives were determined to result in jeopardy of SONC coho salmon. The alternative that did not result in jeopardy included taking out a portion (notching) of the dam. The consultation extended coverage for incidental take of SONC coho salmon for interim operation of the trap and haul facility until December 31, 2003, during which time the dam would be breached.

In the Fiscal Year (FY) 2003 Omnibus Appropriations Conference Report, Congress directed the Corps to abandon its plan to modify Elk Creek Dam and to design and construct a permanent trap and haul facility to replace the existing interim facility. The language also stated that funds may not be used for any further work on the Corps' proposal to remove a section of the dam for fish passage. Therefore, the option of breaching Elk Creek Dam for fish passage is no longer viable and the Corps must re-initiate consultation with NOAA Fisheries for the design and operation of a new trap and haul facility. This new facility is not scheduled to be ready until 2008, necessitating consultation with NOAA Fisheries on the interim operation of the existing facility until the new facility is in place.

1.3 Proposed Action

The proposed action will make structural and operational fish passage improvements at the Elk Creek Dam Project and will continue Federal operation of the interim trap and haul facility to provide adult coho salmon passage past Elk Creek Dam until May 1, 2008. The facility would be operational between October 15 and May 1 each year. The existing weir spans Elk Creek, creating a complete block to upstream adult migrants under all conditions except flow events which overtop the weir. The existing weir is constructed of 1.5-inch steel or aluminum pickets on 3-inch centers inserted in a metal I beam support structure embedded in a concrete bed spanning Elk Creek. The weir crowds adults into a fishway on the north bank of Elk Creek for collection and transport to spawning grounds above the dam. The fishway is a concrete structure 4 feet wide and 40 feet long, extending approximately perpendicular to the north bank. A "V"-shaped fyke made of 1.5-inch round aluminum tubes, spaced on 3-inch centers, traps fish that pass upstream through it.

Fish are held in a concrete holding pond that is 6 feet wide and 27 feet long. Ambient water from Elk Creek is pumped through the pond at a rate of 10 cubic feet per second (cfs) to maintain a water depth of 4 feet in the trap and pond. Trapped fish will be held no longer than 20 hours. To remove hatchery adult coho from the trap, all fish are manually crowded into a smaller area from both ends of the holding pond. Fish are netted one at a time, identified while the net is in the water, and separated. Hatchery fish are placed into a live well for transport to the Cole Rivers Hatchery. Wild fish are released into the transport pool and then crowded into a square, 4-foot well in the existing loading tower. Once fish are crowded into the tower, it is filled with water and the fish are raised to the top of the tower with a braille, spilled down a U-shaped trough, and dropped about 6 feet into an aerated 350-gallon transport tank. Fish are then transported approximately 0.6 miles upstream of the dam and released in Elk Creek.

Fish are transported a minimum of twice daily. Adult fish are held in the transport tank for a maximum of 45 minutes before release, depending on the number of fish. The total transport and holding time is usually shorter than this. To reduce stress, no more than 35 adult fish will be transported per trip.

The Corps proposes to improve the existing trap and haul for the interim period by: (1) Increasing maintenance on the weir; (2) installing new intake screens on the pump that adhere to NOAA Fisheries criteria; (3) contracting an answering service to respond to all pump alarms; (4) reducing the maximum amount of time adults will be held in the trap from 30 hours to 20 hours; (5) not anesthetizing or marking fish with an operculum punch; (6) redesigning the transport pool to allow the crowder to pass completely to the water tower gate completely; (7) replacing the rusty loading chute; (8) reducing the maximum number of fish transported per load from 50 fish to 35 fish; and (9) installing and using two closed-circuit cameras to allow remote supervision of the operations.

Other improvements are planned as soon as funds can be appropriated but no sooner than FY2005. Currently, fish are released directly into a small pool in Elk Creek from the truck. The Corps proposes to construct a ramp down to Elk Creek to provide access to a backwater release area with large woody debris (LWD) for cover. Also, the Corps plans to construct an access road to the upstream side of the diversion tunnel to facilitate access for debris cleaning and maintenance of the trash racks during the peak downstream migration period.

1.4 Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area (project area) involved in the proposed action (50 CFR 402.02). The direct effects occur at or beyond the project site based on the potential for upstream or downstream effects (*e.g.* displacement, injury to, or killing of coho salmon) in the action area. Indirect effects may occur at or beyond the project site when the proposed action leads to additional activities that contribute to aquatic habitat degradation.

For this consultation, the action area encompasses Elk Creek Dam and the trap and haul facilities. In addition, because of the its effects on fish passage, the action affects Elk Creek and all tributaries upstream from the dam that are accessible to SONC coho salmon.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

This Opinion considers the potential effects of the proposed action on SONC coho salmon, which occur in the proposed action area. Within the Rogue River watershed, NOAA Fisheries listed the SONC coho salmon as threatened under the ESA on May 6, 1997 (62 FR 24588), and interim protective regulations were issued under section 4(d) of the ESA on July 18, 1997 (62 FR 38479). Critical habitat was designated on May 5, 1999 (64 FR 24049). Critical habitat includes all streams accessible to listed coho salmon between Cape Blanco, Oregon, and Punta Gorda, California. The designation includes all waterways, substrates, and adjacent riparian zones below longstanding, naturally-impassable barriers. The adjacent riparian zone is defined

based on key riparian functions. These functions are shade, sediment, nutrient/chemical regulation, streambank stability, and input of large woody debris/organic matter.

The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of SONC coho salmon or result in an adverse modification of critical habitat. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

2.1.1 Biological Information

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

Abundance of wild coho salmon spawners in Oregon coastal streams declined from roughly 1965 to 1975, and has fluctuated at a low level since then (Nickelson *et al.* 1992). Spawning escapements for this ESU may be less than 5% of 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 SONC coho salmon ESU, although not at immediate danger of extinction, may become endangered in the future if present trends continue (Weitkamp *et al.* 1995). Preliminary findings of the Biological Review Team (BRT 2003) indicate that recent increases in spawner escapement levels are likely due to good ocean productivity while freshwater productivity continues to decline. Continued degradation of freshwater habitat that results in decreased productivity may lead to localized extinction during the next low ocean productivity cycle (BRT 2003).

NOAA Fisheries described the population status of the SONC coho salmon ESU in its status review (Weitkamp *et al.* 1995) and in the SONC coho salmon final listing rule (62 FR 24588, May 6, 1997). Some of the most recent data on the status of the SONC coho ESU can be found in a status review done by the California Department of Fish and Game (CDFG 2002). According to CDFG, the available information on coho salmon status is primarily in the form of presence-by-brood-year analyses, field surveys conducted in 2001, recent abundance trend information for several stream systems along the central and north coasts, and ocean harvest data. Considered separately, none of these lines of investigation provide conclusive evidence that coho salmon have experienced a substantial decline throughout the SONC coho ESU, either because they are limited in scope or are not particularly robust in detecting trends within specific watersheds. However, most of these indicators show declining trends, and in that respect, provide a high likelihood that populations have declined significantly and are continuing to decline. Some of the indicators show an upward trend in 2000 and 2001, but the overall trend is

still downward in most cases, and most indicators of abundance show values that are much reduced from historical levels. Brown and Moyle (1991) estimated that there has been a reduction in natural spawner abundance of 85% to 94% since the 1940s. These analyses and the 2001 presence surveys indicate that some streams in this ESU may have lost one or more brood-year lineages.

The fish counts at Gold Ray Dam (28 miles downstream on the mainstem Rogue River at river mile 126) provide the best quantitative source of information available on SONC coho salmon abundance in the upper Rogue River subbasin, and may also provide an indicator of population trends of this ESU as a whole. In the eight-year period from 1993 to 2000, counts of adult SONC coho salmon at Gold Ray Dam have ranged from 756 in 1993, to 15,652 in 2000 (Table 1).

SONC coho salmon adults returning to Elk Creek have been closely monitored since the installation of a trap and haul facility at Elk Creek Dam in 1992. Over the last 10 years, the average run size of SONC coho salmon adults returning to the dam site was 616 fish (Table 1). Recent increases in spawner escapement levels are noticeable, but likely due to good ocean productivity while freshwater productivity continues to decline (BRT 2003). In the most recent four-year period for which data are available (1997-2000), adult SONC coho salmon returns to Elk Creek Dam averaged 24.2% of the Gold Ray returns (Table 1).

Table 1. Counts of Adult SONC Coho Salmon (wild fish as identified by ODFW) at Gold Ray and Elk Creek Dams, 1993-2001 (COE 2001).

Year (counts from 9/15-1/31)	SONC coho (wild) at Gold Ray Dam	SONC coho (wild) at Elk Creek Dam	% of Gold Ray fish at Elk Creek Dam
1993-94	756	76	10.1
1994-95	3,265	232	7.1
1995-96	3,345	349	10.4
1996-97	3,516	319	9.1
1997-98	4,566	982	21.5
1998-99	1,310	404	30.8
1999-2000	1,417	288	20.3
2000-2001	15,652	698	4.5
2001-2002	NA	1,466	
2002-2003	NA	1,347	

Satterthwaite and Leffler (1997) summarized returns and monitored SONC coho salmon spawning distribution above the Elk Creek Dam by counting redds and determining presence/absence of coho salmon fry. Coho salmon redds and fry were found in Elk Creek and four of the five tributaries that were surveyed above the damsite, indicating wide distribution of coho salmon adults.

Historically, the Elk Creek watershed was of great importance to coho salmon as a much larger proportion of Rogue River Basin coho spawned in this watershed than represented by the relative size of the watershed. For example, U.S. Fish and Wildlife Service (USFWS 1956) redd surveys conducted from 1949 to 1955, reported a maximum annual coho redd count of 1,469 redds in the upper Rogue River subbasin (2,601 redds for the entire Rogue River Basin), while the maximum annual coho redd count for the Elk Creek watershed was 764 redds, or over half for the subbasin and approximately one-third of the total for the entire basin. The Elk Creek watershed represents only about 3% of the total area within the Rogue River Basin. Similarly, in a report to the Corps in 1961 regarding fish and wildlife resources that would be lost from the construction of dams in the Rogue River Basin, USFWS stated "approximately 3,600 coho salmon enter Elk Creek annually and spawn above Elk Creek damsite. These comprise more than one-third of the entire spawning population of coho salmon in Rogue River Basin." (USFWS 1961).

2.1.2 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). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the definition of the biological requirements and current status of the listed species, and evaluation of 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 salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

Furthermore, NOAA Fisheries evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. NOAA Fisheries must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NOAA Fisheries identifies those effects of the action that impair the function of any essential element of critical habitat. NOAA Fisheries then considers whether such impairment appreciably diminishes the habitat's value for the species'

survival and recovery. If NOAA Fisheries concludes that the action will destroy or adversely modify critical habitat, it must identify any reasonable and prudent alternatives available.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, and juvenile rearing of SONC coho salmon.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed coho salmon is to define the species' biological requirements that are most relevant to each consultation. 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 SONC coho salmon for ESA protection and also considers new available data that is relevant to the determination.

The relevant biological requirements are those necessary for SONC coho salmon to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. For this consultation, the relevant biological requirement is access to support successful migration into and out of Elk Creek.

2.1.4 Environmental Baseline

In step two of NOAA Fisheries' analysis, we evaluate the relevance of the environmental baseline in the action area. Regulations implementing section 7 of the ESA (50 CFR 402.02) define the environmental baseline as the past and present effects of all Federal, state, or private actions and other human activities in the action area. The environmental baseline also includes the anticipated effects of all proposed Federal projects in the action area that have undergone section 7 consultation, and the effects of state and private actions that are contemporaneous with the consultation in progress.

Land uses in the action area include rural, residential, agricultural, and forestry. Riparian areas and stream channels in the action area have been damaged by development activities related to these land uses, throughout the watershed (FEMAT 1993, Botkin *et al.* 1995, OCSRI 1997).

Habitat changes that have contributed to the decline of SONC coho salmon in the action area include: (1) Reduced biological, chemical, and physical connectivity between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields; (3) reduced instream large woody debris; (4) loss or degradation of riparian vegetation; (5) altered stream channel morphology; (6) altered base and peak stream flows; and (7) fish passage impediments (OCSRI 1997).

The habitat baseline for anadromous salmonids in the Elk Creek watershed is described in the joint Rogue River National Forest and Medford Bureau of Land Management watershed analysis report (USDA and USDI 1996), and summarized below.

A number of human activities within the watershed, such as the construction and use of roads within floodplains, have tended to create straightened channels. This loss of complex structure within streams has resulted in an overall increase in the velocity and quantity of water flows during and shortly after storm events because of the relative lack of resistance to water movement. Consequently, the streams in the watershed have substantially reduced densities of large woody debris, and their channels have downcut through alluvial substrate to bedrock, thus becoming confined to a single channel and disconnected with their floodplains even during high water. This channel simplification trend has also resulted in substrate coarsening as the more rapidly moving stream transports larger material downstream (USDA and USDI 1996).

Large-scale alterations and removal of riparian vegetation have occurred in the watershed through harvest of overstory conifer trees, road building, grazing, and rural developments. This loss of large trees within the riparian areas has collectively caused a reduction in the amount and distribution of streamside shade, large wood, and streambank stability. These changes have significantly contributed to degradation of aquatic habitat through warmer water temperatures, simpler channels, and greater streambank erosion, respectively (USDA and USDI 1996).

The watershed's hydrology, or the way in which water is captured, stored, and released, has been altered in the Elk Creek watershed as a result of cumulative past human activities, primarily related to road building, timber harvesting, grazing, and rural development. These activities have resulted in increased stream temperatures (five streams in the watershed are listed as "water quality limited" by the Oregon Department of Environmental Quality), occasional peaks in turbidity above natural rates, and increased rates and quantities of runoff and soil transport during and after storm events. The cumulative effects associated with past human activities have resulted in a limited amount of high quality, well-distributed anadromous salmonid habitat in the Elk Creek watershed (USDA and USDI 1996).

2.1.5 Analysis of Effects

The effects analysis presented in this section is based on information in the BA and supplementary material. The proposed action is the continued use of an upgraded existing trap and haul facility from October 15 through May 1 annually, until May 1, 2008. NOAA Fisheries expects this action will cause take of SONC coho salmon due to the following: (1) Some adults refuse to enter the trap and go back downstream (trap rejection); (2) some adults hauled upstream of the dam fall back through the dam and get trapped in the spill pool between the dam and weir; (3) during high flows when the weir is overtopped, any coho salmon adults that move above the weir will be trapped in the spill pool between the dam and weir; (4) some adults are injured in the trap and/or during hauling and handling; (5) migration of adult coho salmon is delayed by the trap and haul operation even when it runs smoothly; (6) spawning may be disrupted or displaced due to transport; (7) downstream-migrating juveniles may be impinged on

debris that clogs the diversion tunnel and weir during high spring flows, which may result in injury or death; and (8) some adults experience delay and/or injury during recovery at release location.

There are two ways fish can get trapped between the dam and the weir, either by falling back from above the dam or by passing over the weir during high flow events. Fish trapped in this area appear to be unable or unwilling to negotiate the diversion tunnel. The weir has failed numerous times during high flows because of debris buildup and the force of water on the structure (Wyant and Ferrell 1994; Satterthwaite and Leffler 1997). Being trapped in this area results in many coho salmon spawning in the short stretch between the dam and weir. Spawning habitat quantity and quality are low between the weir and dam, which results in redd superimposition in years when large numbers of fish are able to negotiate their way upstream past the weir or fall back through the diversion tunnel. Fish encountering the weir as they fall back may end up residing in the stilling basin pool and not spawning, as evidenced by the small numbers of unspawned carcasses retrieved from the structure. A few adults may return to the trap for a second chance of being transported to spawning habitat upstream, but it is likely that many do not. The trap is not constructed such that these fish can access it readily; they must first pass downstream of the weir the few times this is possible, and then turn around and proceed upstream.

Adult fish can be injured when they are trapped, handled, and transported. As described in section 1.3, fish transported through the Elk Creek trap are exposed to several potential sources of injury and mortality. Adult fish can be injured while being held in the raceway, crowded with gates, sorted by manual netting in the holding pond, loaded into a truck and offloaded into a small recovery area in Elk Creek. While over the past nine years, the Corps has documented eight deaths of SONC coho killed by the trap and haul operation, the extent of indirect and delayed mortality associated with the trapping facility has not been determined. The Elk Creek trap and haul facility deviates substantially from trapping and handling guidelines described in NOAA Fisheries' Draft Anadromous Salmonid Passage Facility Guidelines and Criteria (http://www.nwr.noaa.gov/1hydrop/hydroweb/docs/release_draft.pdf), which aim to minimize injury and mortality associated with trapping facilities.

In addition to mortality associated with the trapping procedure, adult coho salmon could be killed if the holding pond is dewatered. Water flow ceases when the intake pump shuts off. The pump shuts off when the intake screens that protect the pump become clogged with debris. Debris must be manually cleaned from the intake screens. An automated alarm sounds when the pump shuts off. Depending on how waterlogged the wooden stoplogs are at the terminus of the holding pond, the holding pond dewaters within 60 minutes. However, this form of mortality has not happened to date because personnel were able to respond to pump alarms within 30 minutes. The pump alarm answering service and new contractor will ensure that personnel will respond to all alarms within the 30-minute timeframe. Also, new intake screens were installed in 2002, which do not clog with debris as frequently as the previous screens and cause the pump to shut down or signal alarms.

Downstream migrating fish pass first either through the diversion tunnel, or over the partially completed spillway, and then through or over the weir. During the winter, debris builds up on the trash racks in front of the upstream end of the diversion tunnel and on the weir. Periodic cleaning of debris occurs on the weir, but it is very difficult to clean the debris from the trash racks until flows drop in April or May. While it is likely that some juvenile outmigrants are injured or killed each year, the number is assumed to be minimal since ODFW staff have never observed injured or killed juveniles.

While the upgraded existing trap and haul facility may sustain a SONC coho salmon population within Elk Creek through capture and transport of adults above the dam, injury and death induced by the trap and haul facility will occur. The Corps has documented eight adult salmon mortalities associated with the trap andhaul program (Satterthwaite 2003), and delayed mortalities associated with the existing trap and haul program have been documented (COE 2000). The action is expected to continue to kill and injure SONC coho salmon.

2.1.6 Critical Habitat

SONC coho salmon critical habitat was designated May 5, 1999 (64 FR 24049). SONC coho salmon critical habitat encompasses accessible reaches of all rivers (including estuarine areas and tributaries) between the Mattole River in California, and the Elk River in Oregon, including all waterways and substrate below longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for at least several hundred years). The proposed action is limited to the operation and maintenance of the trap and haul facility, which does not alter critical habitat in any way. If not for the operation of the trap and haul facility, critical habitat would be adversely modified by the continued existence of Elk Creek Dam.

2.1.7 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.

NOAA Fisheries is not aware of any specific future non-federal activities within the action area that would cause greater effects to listed species than presently occurs. The action area includes tracts of private lands. Land use on these non-federal lands include rural development, agricultural, and commercial forestry. Chemical fertilizers or pesticides are used on many of these lands, but no specific information is available regarding their use. NOAA Fisheries does not consider the rules governing timber harvests, agricultural practices, and rural development on non-federal lands within Oregon to be sufficiently protective of watershed, riparian, and stream habitat functions to support the survival and recovery of listed species. Therefore, these habitat functions likely are at risk due to future activities on non-federal forest lands within the basin.

NOAA Fisheries does not expect a future increase in effects from private lands within Elk Creek. Private lands that will be managed as agriculture and forestry have been actively and fully managed as such. No more land is available for increased population, or increased agriculture or forestry.

2.1.8 Conclusion

The fourth step in NOAA Fisheries' jeopardy analysis is to decide whether the proposed action, considering the above factors, is likely to appreciably reduce the likelihood of the species' survival and recovery in the wild. After reviewing the current status of SONC coho salmon, the environmental baseline for the action area, the effects of the proposed action and its cumulative effects, NOAA Fisheries has determined that the Elk Creek Trap and Haul Project, as proposed, is not likely to jeopardize the continued existence of SONC coho salmon or cause adverse modification or destruction of designated critical habitat. These conclusions were based on the following considerations: (1) Monitoring from the previous nine years has documented a limited number of killed or injured coho salmon; and (2) the proposed operation procedures of the trap and haul facility will have less impact than the previous operation procedures.

2.1.9 Conservation Recommendation

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

To the extent possible, the Corps should continue to pursue notching or completely removing Elk Creek Dam. NOAA Fisheries believes the most biologically sound solution to the Elk Creek Dam situation is to allow for free and unimpeded upstream and downstream migration at all times of the year. NOAA Fisheries sees no biological or environmental reason to keep the Elk Creek Dam in place.

Please notify NOAA Fisheries if the Corps carries out these recommendations so that we will be kept informed of actions that minimize or avoid adverse effects, and those that benefit species or their habitats.

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by

regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

2.2.1 Amount or Extent of Take

SONC coho salmon migrating to and from Elk Creek must pass through or by the trap and haul facilities, and will be exposed to the effects from the trap and haul facilities. NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of SONC coho salmon. Trapping, handling, and transporting adult coho salmon is expected to result in incidental take of no more than two individuals per year. Despite the use of the best available information, estimating the number of fish that might be injured or killed by the effects of other project components, such as delayed adult mortality and juvenile injury, is difficult, if not impossible. In such circumstances, the anticipated amount of take is characterized as unquantifiable.

In instances such as this, NOAA Fisheries designates the expected level of take in terms of the extent of take allowed. The extent of incidental take from trapping and hauling adult SONC coho salmon is limited to that which occurs within the trap facilities and the hauling truck. The extent of incidental take from killing or injuring SONC coho salmon juveniles is limited to that which occurs on the weir of the trapping facility.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be carried out so that they become binding conditions for the incidental take exemption in section 7(a)(2) to apply. The Corps has the continuing duty to regulate the activities covered in this incidental take statement. If the Corps fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of listed fish resulting from implementation of this Opinion.

1. Avoid or minimize incidental take due to handling adult SONC coho salmon during interim trap and haul operations.

2. Ensure completion of a monitoring and reporting program to confirm this Opinion is meeting its objective of avoiding and minimizing incidental take.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, 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 (interim trap and haul operations), the Corps shall ensure that:

   a. The entire capture and release operation is conducted or supervised by a fishery biologist experienced with trap and haul operations and competent to ensure the safe handling of all ESA-listed fish.
   b. ESA-listed fish are handled with extreme care, keeping fish in water to the maximum extent possible to prevent the added stress of out-of-water handling.
      i. No adult coho may be held in the fishway or holding ponds longer than 20 hours.
      ii. Anesthesia and operculum punches will not be used.
      iii. The transfer tank will hold at least 350 gallons of aerated water.
      iv. No fish will be held in the transfer tank longer than 45 minutes.
      v. No more than 35 adult coho will be transferred per truckload.
      vi. Each fish will be safely released as quickly as possible, and in no case will any fish be held in the transport tank longer than 45 minutes.
   c. ESA-listed fish are not transferred to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.
   d. NOAA Fisheries or their designated representative may accompany the capture team during the trap and haul activity, and to inspect the team's trap and haul records and facilities.
   e. All other Federal, state, and local permits necessary to conduct the capture and release activity are obtained.
   f. The supervisory fishery biologist is provided with a copy of the following notice.

      > If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Roseburg Field Office of NOAA Fisheries Law Enforcement at 541.957.3388. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the

responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

2. To implement reasonable and prudent measure #2 (reporting), the Corps shall:

   a. Annual report. Submit an annual progress report to NOAA Fisheries at the address below with the following information by September 31 each year during which trap and haul operations take place.

   b. Annual report information. The annual report will describe the permittee's success meeting the permit conditions and include the following information.

      i. Project name and location.
      ii. Corps contact person.
      iii. Supervisory fish biologist – name and address.
      iv. Dates of trap and haul operation
      v. Number of wild and hatchery adult fish handled.
      vi. Condition of all fish released.
      vii. Any incidence of observed injury or mortality of listed species.
      viii. Any other data or analyses the Corps or applicant believes is necessary or helpful to assess success of interim trap and haul operations.

   c. Annual coordination. Meet with NOAA Fisheries by November 31 each year to discuss the annual monitoring report, including its regulatory and operational applications, and any action necessary to make the program more effective, such as action to improve survival at the release site and the advisability of continued separation of wild and hatchery fish.

   d. Failure to provide timely monitoring causes incidental take statement to expire. If the Corps fails to provide specified monitoring information by September 31, NOAA Fisheries will consider that a modification of the action that causes an effect on listed species not previously considered and causes the incidental take statement of the Opinion to expire.

   e. Reinitiation contact. To reinitiate consultation, contact the Oregon State Habitat Office of NOAA Fisheries, at the address below.

Director, Oregon State Habitat Office
Habitat Conservation Division
National Marine Fisheries Service
Attn: 2003/01436
525 NE Oregon Street
Portland, OR 97232

3. MAGNUSON-STEVENS ACT

3.1 Background

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

Pursuant to the MSA, the Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. Designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km) (PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border (PFMC 1999).

Detailed descriptions and identifications of EFH are contained in the fishery management plans for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Pacific salmon (PFMC 1999). Casillas *et al.* (1998) provides additional detail on the groundfish EFH habitat complexes. Assessment of the potential adverse effects to these species' EFH from the proposed action is based, in part, on these descriptions and on information provided by the Corps and the ODFW.

3.3 Proposed Actions

The proposed actions are detailed above in section 1.3 of this Opinion. The action area is defined in section 1.4, and includes the Elk Creek and its tributaries above the trap and haul facility. The action area includes habitats that have been designated as EFH for various life-history stages of coho salmon and chinook salmon (*O. tschawytscha*).

3.4 Effects of Proposed Action

As described in detail in section 2.1.6 of the Opinion, the proposed action may result in adverse effects to habitat parameters. These adverse effects are:

- Barrier to upstream migration.

3.5 Conclusion

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

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions which may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the biological assessment will be implemented, it does not believe that these measures are sufficient to address the adverse impacts to EFH described above. The conservation recommendation outlined in section 2.1.9 would address the long-term adverse effects this project has on EFH. Accordingly, NOAA Fisheries recommends that the Corps implement that recommendation to minimize the potential adverse effects to EFH.

3.7 Statutory Response Requirement

Pursuant to the MSA (§305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The Corps must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(k)).

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