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:
2002/01365

November 10, 2003

Mr. Lawrence Evans
U.S. Army Corps of Engineers, Portland District
ATTN: Mary Headley
P.O. 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 North Macadam Stormwater Outfall Construction, Willamette River Mile 13.6, Multnomah County, Oregon (Corps No. 200100867)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) pursuant to section 7 of the Endangered Species Act (ESA) prepared by the National Marine Fisheries Service (NOAA Fisheries) on the effects of issuing section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act permits to authorize construction of the North Macadam Stormwater Outfall at Willamette River Mile 13.6 in Multnomah County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Lower Columbia River and Upper Willamette River chinook salmon (*Oncorhynchus tshawytscha*), and Lower Columbia River and Upper Willamette River steelhead (*O. mykiss*). Pursuant to section 7 of the ESA, NOAA Fisheries included an incidental take statement with reasonable and prudent measures and non-discretionary terms and conditions that NOAA Fisheries believes are necessary and appropriate to minimize the potential for incidental take associated with the proposed action.

Any release of oil, toxic chemicals, nutrient-laden water, or other pollutants typically found in stormwater into a listed species' habitat is a habitat-modifying activity that may harm listed species and therefore may be considered a "take" under the ESA.[1] Stormwater will continue to be released from the existing facility whether or not the new stormwater outfalls are constructed. The existing stormwater releases are part of the current environmental baseline for the site. NOAA Fisheries does not consider any take

[1] See, 64 FR 60727 (November 8, 1999) (defining 'harm' as an element of 'take' in the ESA, citing pollutant discharge as an example) and 65 FR 42522 (July 10, 2000) (applying take prohibition to threatened species, and describing stormwater discharge as a source of take associated with redevelopment).

associated with such a release to be incidental to the proposed action, and therefore, compliance with these terms and conditions will not remove the prohibition against take due to the existing discharge from the new outfall. Any incremental increase in stormwater discharge as a result of development at the site, either in volume or contaminants, is included in the proposed action and is included in the jeopardy analysis and take statement for this Opinion. However, because current stormwater flows would continue to be released from the facility, NOAA Fisheries encourages the permit applicants – Portland Development Commission, Oregon Department of Transportation, and the Schnitzer Investment Corporation – to pursue an appropriate form of long-term incidental take coverage for those stormwater discharges, and to complete early coordination with NOAA Fisheries to include ESA compliance as part of the planning process to prepare and evaluate alternatives for further redevelopment of the South Waterfront area.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation, please contact Dr. Nancy Munn of my staff in the Oregon Habitat Branch at 503.231.6269.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Schnitzer Investment Corporation
City of Portland
Oregon Department of Transportation

Endangered Species Act - Section 7 Consultation
Biological Opinion

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

North Macadam Stormwater Outfall Construction,
Willamette River Mile 13.6,
Multnomah County, Oregon
(Corps No. 200100867)

Agency:	U.S. Army Corps of Engineers
Consultation Conducted By:	National Marine Fisheries Service, Northwest Region
Date Issued:	November 10, 2003
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2002/01365**

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1. INTRODUCTION

1.1 Consultation History

On November 25, 2002, the National Marine Fisheries Service (NOAA Fisheries) received a request from the U.S. Army Corps of Engineers (COE) for Endangered Species Act (ESA) section 7 formal consultation for the North Macadam Stormwater Outfall Installation Project, Willamette River, Multnomah County, Oregon. The COE also requested essential fish habitat (EFH) consultation under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for chinook salmon and coho salmon (*O. kisutch*), and starry flounder *(Platichthys stellatus*). Subsequently, NOAA Fisheries requested additional information regarding the treatment of stormwater. The request was made via e-mail on February 14, 2003. A response was received on March 21, 2003. Formal consultation under the ESA and MSA was initiated on March 21, 2003. A 60-day extension was requested on September 8, 2003.

The Portland Development Commission (PDC), Oregon Department of Transportation (ODOT), and the Schnitzer Investment Corporation (Schnitzer) are jointly proposing to replace two aging stormwater outfall pipes with a new combined system along the bank of the Willamette River in the North Macadam or South Waterfront District of Portland. The applicants propose to install a 96-inch diameter stormwater outfall pipe to replace the lower portion of two failing stormwater pipes. The new combined system pipe would be installed on the upland portion of the site, with an outfall extending below the ordinary high water line of the river. Approximately 100 cubic yards of riprap and gravel fill material would be placed below the ordinary high water line to protect the outfall structure from scour and erosion.

COE determined that Lower Columbia River (LCR) and Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) and LCR and UWR steelhead (*O. mykiss*) are likely to be adversely affected (LAA) by the proposed project. This biological opinion (Opinion) is based on the information presented in the biological assessment (BA), and provided during discussions with the COE, the applicants, and the project consulting firm Fishman Environmental.

The objective of this Opinion is to determine whether the issuance of a permit to decommission of the old stormwater pipes and construct the proposed pipe and outfall along the Willamette River is likely to jeopardize the continued existence of the ESA-listed species described in Table 1. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402. For purposes of this consultation, effluent discharge from the existing stormwater outfalls will be considered as part of the environmental baseline and future discharges will be evaluated as indirect and cumulative effects, although any future discharges that require Federal action will be evaluated in a separate biological opinion.

The objective of the EFH consultation is to determine whether the proposed action may adversely affect designated EFH for coho salmon, chinook salmon, and starry flounder, and to

recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

Table 1. References for Additional Background on Listing Status, Biological Information, Protective Regulations, and Critical Habitat Elements for the ESA-Listed Species Considered in this Consultation.

Species ESU	Status	Protective Regulations	Biological Information, Historical Population Trends
Chinook salmon (*O. Tshawytscha*)			
Lower Columbia River	T 3/24/99; 64 FR 14308	7/10/00; 65 FR 42422	Myers *et al.*1998; Healey 1991
Upper Willamette River	T 3/24/99; 64 FR 14308	7/10/00; 65 FR 42422	Myers *et al.*1998; Healey 1991
Steelhead (*O. mykiss*)			
Lower Columbia River	T 3/19/98; 63 FR 13347	7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996
Upper Willamette River	T 3/25/99; 64 FR 14517	7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996

1.2 Proposed Action

The North Macadam Storm Sewer Improvement Project is along the west bank of the Willamette River at approximately river mile 13.6, immediately south of the Marquam Bridge between Moody Street and the Willamette River in Portland, Oregon. The Portland Development Commission (PDC), Oregon Department of Transportation (ODOT), and the Schnitzer Investment Corporation (Schnitzer) are jointly proposing to replace two aging stormwater outfall pipes with a new combined system. The pipes are on property owned by Schnitzer. All in-water work is proposed to be completed during the approved in-water work window of July 1 to October 31 and/or December 1 to January 31.

The two existing outfall pipes are owned by the City of Portland (City) and ODOT. They are permitted under City and ODOT National Pollutant Discharge Elimination System (NPDES) permits. The City's stormwater pipe carries stormwater runoff from nearby neighborhoods and ODOT's pipe carries stormwater runoff from state roads. The new pipe will combine the two sources of effluent into one pipe. The new outfall will be added to the City's permitted outfall inventory and regulated under the City's NPDES Municipal Stormwater Permit.

Schnitzer plans to develop their property as part of a compact urban project that will provide jobs, housing and open space. The two existing storm lines will preclude either the public or private sector from fully accomplishing these goals in a safe and effective manner.[2] If these lines are left in the existing locations, future development goals will be unattainable. Furthermore, one of the existing lines leaks, is plugged with debris, and is undersized. Access for maintenance is almost impossible. Therefore, construction of this stormwater outfall pipe is necessary for future development in accordance with the adopted South Waterfront Urban Renewal Plan. Furthermore, development subsequent to the construction of the outfall pipe will be in accordance with the stormwater regulations in place at the time development occurs.

These existing storm sewer lines will be removed back to the riprapped west bank face of the Willamette River and capped. The remaining underground pipes will be filled with a slurry mix to seal them from groundwater infiltration. Removal of the existing pipeline outfalls extending beyond the bank face will likely be performed by hand and not require heavy equipment which could damage the existing vegetation or bankline. The contractor will revegetate any disturbed portions of the bankline using native plant species.

Installation of Outfall Replacement

Installation of a 96-inch combined stormwater outfall pipe will tie into and replace the lower portions of the two old stormwater pipes. The new outfall will replace approximately 715 linear feet of aging 48-inch corrugated metal pipe (CMP) and approximately 825 linear feet of aging 66-inch concrete monolithic pipe. The new combined system pipe will be installed upland within a stable, shored trench to be dug using equipment operated only in upland areas. No equipment will be operated within the river or below the top of bank. The installation of the new outfall pipe will require some work within the water although all equipment will work from a staging area on the bank. The proposed pipe installation will use clean, crushed rock backfill material. All excavated soil will be moved to an upland area beside the project area and away from the streambank.

Bank disturbance will be limited to the pipe installation area. The pipe end will be mitered to match the bank face. This site was selected for the outfall because it is relatively flat, with a bank slope slightly greater than 4:1.

Placement of Fill Material

Approximately 100 cubic yards of riprap and gravel fill material will be placed below the ordinary high water (OHW) to re-establish proper bankline elevation and contour after installation of the 96-inch replacement outfall. Rock will be placed approximately four feet above and five feet around the concrete pad that protects the outlet pipe at the streambank. In addition, this rock will be placed approximately three feet below the outfall to protect that portion of the bank that accepts the discharge.

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[2] Email from Ann Gardner, Schnitzer Investment Group, to Nancy Munn, NOAA Fisheries (September 30, 2003) (discussing relationship between outfall construction and site development).

Erosion Control/Bank Armor
Class 700 riprap material will be used to protect the bank from erosion under varying river levels and wave action. Clean gravel fill material will be placed between the offshore toe and the toe of the existing riprap along the shoreline to match the slope of the existing bank at approximately 4:1. This rock placement is designed to prevent the soil from eroding around the outlet and will feature live stake plantings to allow for a vegetative cover of any exposed area.

Existing Stormwater Outfall Structures
The applicants propose to remove the portion of these outfalls that extend beyond the bank face. This work will be completed by hand and not require use of heavy equipment that will disturb the existing vegetation or bankline. The ends of the remaining pipes will be capped with brick or concrete mortar.

The failing condition of the existing stormwater outfall pipes may allow groundwater infiltration to occur. To prevent this, the remaining underground portion of the existing pipes will be sealed with a slurry mix.

Stormwater Outfall Operations
The outfalls are part of existing inventories and are assumed by the project engineers to be covered by existing NPDES permits. Calculated velocities for the replacement outfall under maximum pipe capacity are below 4 feet per second.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The action area is defined by NOAA Fisheries regulations (50 CFR 402.02) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area includes the riparian area, banks, channel and water of the Willamette River beginning 100 feet upstream of the construction site and extending 300 feet downstream.

Essential habitat features for salmonids are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. The Willamette River within the action area serves as a rearing and migration area for listed species considered in this Opinion. The essential habitat features that the proposed project may affect are water quality and riparian vegetation.

According to a recent draft of "Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead," drafted by the West Coast Salmon Biological Review Team (BRT), a number of ESUs were determined by the majority of the BRT "likely to

become endangered in the foreseeable future" including LCR chinook, UWR chinook, LCR steelhead and UWR steelhead (NOAA Fisheries 2003). Preliminary conclusions for each listed ESU considered in this Opinion are discussed below.

Lower Columbia River Chinook

The abundance of natural origin spawners range from completely extirpated for most of the spring-run populations to over 6,500 for the Lewis River bright population. The majority of the fall-run tule populations have a substantial fraction of hatchery origin spawners in the spawning areas and are hypothesized to be sustained largely by hatchery production. Exceptions are the Coweeman and Sandy River fall-run populations which have few hatchery fish spawning on the natural spawning areas. These populations have recent mean abundance estimates of 348 and 183 spawners respectively. The majority of the spring-run populations have been extirpated largely as the result of dams blocking access to their high elevation habitat. The two bright chinook populations, *i.e.* Lewis and Sandy, have relatively high abundances, particularly the Lewis.

In many cases, data were not available to distinguish between natural and hatchery origin spawners, so only total spawner (or dam count) information is presented. This type of figure can give a sense of the levels of abundance, overall trend, patterns of variability, and the fraction of hatchery origin spawners. A high fraction of hatchery origin spawners indicates that the population may potentially be sustained by hatchery production and not the natural environment. It is important to note that estimates of the fraction of hatchery origin fish are highly uncertain since the hatchery marking rate for LCR fall chinook is generally only a few percent and expansion to population hatchery fraction is based on only a handful of recovered marked fish.

Threats to chinook spawning and rearing habitat in the Lower Columbia River ESU continue to be habitat degradation and loss due to extensive hydropower development projects, urbanization, logging and agriculture.

Upper Willamette River Chinook

All spring chinook in the ESU, except those entering the Clackamas River, must pass Willamette Falls. The ratio of hatchery-origin to wild-origin chinook passing the falls has not be assessed, but the majority of fish are undoubtedly of hatchery origin. No formal trend analyses have been conducted on any of the UWR chinook populations. The two populations with long-time series of abundance, Clackamas and McKenzie, have insufficient information on the fraction of hatchery-origin spawners to permit a meaningful analysis.

An analysis was conducted by Steel and Sheer (2002) to assess the stream length historically and currently available to salmon populations in the Upper Willamette. Stream miles usable by salmon are determined based on simple gradient cut-offs and on the presence of impassable barriers. This approach tend to over-estimate the number of usable stream miles, as it does not take into consideration habitat quality other than gradient. However, the analysis does indicate

that for some populations the number of stream habitat miles currently accessible is significantly reduced from the historical condition.

A large number of spring chinook are released in the Upper Willamette River as mitigation for the loss of habitat above Federal hydroprojects. This hatchery production is considered a potential risk because it masks the productivity of natural population, the interbreeding of hatchery and natural fish poses potential genetic risks, and the incidental take from the fishery promoted by the hatchery production can increase adult mortality of natural fish. Harvest retention is only allowed for hatchery marked fish, but take from hooking mortality and non-compliance remains an issue.

Lower Columbia River Steelhead

Based on the updated information provided in the BRT report, the information contained in previous LCR status reviews, and preliminary analyses, the number of historical and currently viable populations have been tentatively identified. Like the previous BRT, the current BRT could not conclusively identify a single population that is naturally self-sustaining. Over the period of the available time series, most of the populations are in decline and are at relatively low abundance. No population has a recent mean greater than 750 spawners. In addition, many of the populations continue to have a substantial fraction of hatchery origin spawners.

Upper Willamette River Steelhead

All steelhead in this ESU must pass Willamette Falls. Two groups of winter steelhead currently exist in the Upper Willamette River. The "late-run" winter steelhead exhibit the historical phenotype adapted to passing the seasonal barrier at Willamette Falls. The falls were laddered and hatchery "early-run" winter steelhead were released above the falls. The early-run fish were derived from Columbia Basin steelhead outside the Willamette River and are considered non-native. The release of winter-run hatchery steelhead has recently been discontinued, but some early-run winter steelhead are still returning from the earlier hatchery releases and from whatever natural production of the early-run fish that has been established. Non-native summer run hatchery steelhead are also released into the Upper Willamette River. No estimates of the absolute total numbers of spawners in the individual populations are available.

As in the LCR steelhead ESU, the BRT could not conclusively identify a single population that is naturally self-sustaining. All populations are relatively small, with the recent mean abundance of the entire ESU at less than 6,000. Over the period of the available time series, most of the populations are in decline. The recent elimination of the winter-run hatchery production will allow estimation of the natural productivity of the populations in the future, but the available time series are confounded by the presence of hatchery-origin spawners. On a positive note, the counts all indicate an increase in abundance in 2001, likely at least partly as a result of improved marine conditions.

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. 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 initial steps of: (1) Defining the biological requirements and current status of the listed species; and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. 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.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of listed species under the existing environmental baseline.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmonids 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 the species for ESA protection and also considers new data available that is relevant to the determination.

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

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration, juvenile rearing, and adult spawning. LCR and UWR chinook salmon and LCR and UWR steelhead survival in the wild depends upon the proper functioning of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while removing adverse impacts of current

practices. In conducting analyses of habitat-altering actions, NOAA Fisheries defines the biological requirements in terms of a concept called Properly Functioning Condition (PFC) and applies a "habitat approach" to its analysis (NMFS 1999). The status of LCR and UWR chinook salmon and LCR and UWR steelhead , based upon their risk of extinction, has not significantly improved since the species were listed.

2.1.4 Environmental Baseline

The Willamette River watershed covers a vast area (29,785 km^2) bordered on the east and west by the Cascades and the Pacific coast ranges. It drains from as far south as Cottage Grove and flows north to its confluence with the Columbia River. The Willamette River watershed is the largest river basin in Oregon. It is home to most of the state's population, its largest cities, and many major industries. The watershed also contains some of Oregon's most productive agricultural lands and supports important fishery resources (City of Portland 2001).

The uplands (Coast and Cascade Ranges) receive about 80% of the precipitation falling on the Willamette River basin, and store much of this water as snow. Ecosystem productivity in these upland streams is relatively low, with aquatic insects gleaning much of their diet from material that falls into running water. In larger, slower tributaries, more plant material is produced in the stream itself. The mainstem supports a highly productive algal community that blooms as temperatures rise in the summer. Insects and some vertebrates feed on these plants, and many vertebrates, including salmonids, feed on stream-dwelling insects. Much of the habitat for Willamette River salmonids has been degraded by various land use practices or eliminated by dams. Wild salmonid populations have declined precipitously over the last century in the Willamette River (WRI 1999).

Significant changes have occurred in the watershed since the arrival of Europeans in the 1800s. The watershed was mostly forested land before the arrival of white settlers. Now, about half the basin is still forested. One-third of the basin is used for agriculture, and about 5% is urbanized or is in residential use. The river receives direct inputs from treated municipal wastes and industrial effluents. Nonpoint source input from agricultural, silvicultural, residential, urban, and industrial land uses are also significant, especially during rainfall runoff.

The Willamette River, from its mouth to Willamette Falls, is currently on the 2002 Oregon Department of Environmental Quality (ODEQ) 303(d) list as water quality limited for temperature (summer), bacteria, biological criteria (fish skeletal deformities), and toxics. Results from ODEQ ambient monitoring data indicate that 68% of the values collected during the summer at RM 7, and 61% of the values at RM 13.2 exceed the temperature standard of 68°C. In the lower Willamette River, average turbidity levels tend to be higher in fall and winter. Monthly average turbidity ranges from four NTUs to 149 NTUs.

In 1997, ODEQ and the Environmental Protection Agency (EPA) took sediment samples within the Portland Harbor. The results of the study indicated that sediments in the harbor, including within the project area, contain concentrations of metals, polychorinated biphenyls (PCBs),

pesticides, herbicides, dioxins/furans, tributyltin (TBT), and polycyclic aromatic hydrocarbons (PAHs) above EPA contaminant guidelines. Cleanup of the contaminated sediments is presently being addressed under the Federal Superfund process. In addition, skeletal deformities in fish upstream of Willamette Falls suggest that there may also be chemical contamination upstream of the Portland Harbor area. A significant source of contamination is the numerous stormwater outfalls, including the subject outfall, that empty into the Willamette River.

Basin health has been affected in terms of water and habitat quality and quantity. Many native species have been adversely affected due to the introduction of non-native species, loss of habitat and habitat degradation, and contaminated waters which impede species' development. Some streams and rivers in the basin have high temperatures and insufficient flows during summer months, which adversely impact aquatic species such as salmon and steelhead. Low flows also reduce the ability of the river to dilute contaminants, the presence of which may lead to dangers for both aquatic species and humans. Such contaminants are often found with great frequency in the basin as a result of erosion from agricultural, industrial, urban and forested lands. Increased population and development have further compounded these problems, resulting in the loss of valuable habitat and increased pollution (WRI 1999).

The proposed project is on the lower Willamette River at RM 13.6. This is in an area comprised primarily of industrial facilities such as ports and commercial docks used for manufacturing and shipping of local products. The area has some riparian vegetation consisting of blackberries and weeds. Much of the river bank in this area of the Willamette River is lined with riprap and debris from previous industrial operations such as abandoned docks, large pieces of concrete and wood.

2.1.5 Analysis of Effects

2.1.5.1 Effects of the Proposed Action

Effects to river habitat and fish populations can be separated into direct and indirect effects. Direct effects are those that contribute to the immediate loss or harm of individual fish or embryos (*e.g.*, heavy equipment directly crushing a fish, crushing or destabilizing a redd that results in the actual destruction of embryos, dislodging the embryos from the productive nest and ultimately destroying eggs). Indirect effects are those effects which occur at a later time, causing specific habitat features (*e.g.*, undercut banks, sedimentation of spawning beds, loss of pools), localized reductions in habitat quality (*e.g.*, sedimentation, loss of riparian vegetation, changes in channel stability and structure), which ultimately cause loss or reduction of populations of fish, or reductions in habitat quantity and/or quality.

Direct effects to listed fish may occur during the in-water work required for removal of the two old outfall pipes and installation of the new outfall pipe. Although this work is proposed to be done during the in-water work window, listed fish are present in the lower Willamette throughout the year (ODFW 2003). Juvenile salmonids tend to frequent shallow water habitats

such as along banklines. While the project site does not offer fish a refuge (*e.g.*, backwater habitat) or good feeding opportunities, fish may still be present while the in-water work is on-going. Lethal take of listed fish is not expected because no heavy equipment will be working in the stream. However, normal behavior patterns may be disrupted while activities are occurring in the water.

Several types of indirect effects to listed fish associated with the proposed action are possible. Earth moving activities in and adjacent to the water have the potential to increase turbidity in the Willamette River over the short term. Reported influences of increased suspended sediment and turbidity on fish range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorous fish/bird predation rates (Gregory and Levings 1988), and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and reduce survival (Bell 1991) and reduce cover for juvenile salmonids (Bjornn and Reiser 1991). Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure (not just the TSS concentration).

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, except when the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987).

Exposure duration is a critical determinant of the occurrence and magnitude of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. When turbidity is localized and brief, there is a low probability of direct mortality because the fish should be aware and agile enough to avoid any equipment used to repair the slope. However, research indicates that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991). Newly-emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985).

NOAA Fisheries anticipates that turbidity generated from bank work will be limited in both space and time and confined to the area close to the in-water and bank activities. NOAA Fisheries does not expect direct lethal take to occur because of turbidity. The work area will be surrounded by a turbidity curtain and sedimats will be used to collect sediment suspended by construction activity. NOAA Fisheries expects that some individual chinook salmon and

steelhead (both adult and juvenile) may be harassed by turbidity plumes when the curtain is removed, but should be able to easily avoid potential plumes.

Maximum discharge velocities at many outfalls can harm fish because the flows attract fish and consequently disrupt normal movement patterns. Generally flows greater than 4 feet per second are considered attraction flows (Melissa Jundt, NOAA Fisheries, August 2003). Consequently, the outfall velocity is not expected to harm listed fish because the calculated maximum discharge velocity at the proposed outfall is predicted to be less that 4 feet per second.

Riprap and gravel will be placed on the bankline and beneath the new outfall to protect the bank slope and the outfall from wave action and high river flows. Placement of riprap on the streambank will prevent long-term recovery of the bank with riparian vegetation. Riparian vegetation is an essential component of salmon habitat by cooling water temperatures, providing cover, providing an energy source and a substrate to the aquatic environment to support secondary production. The proposed project incorporates willow stakes in the streambank riprap to provide some functional riparian vegetation. As the willows mature, they will provide some cover and refugia during high water events. Currently, this function is not being met since the project area lacks riparian trees and shrubs.

Since the construction of this stormwater outfall pipe is necessary for further urban development in the project area in accordance with the adopted South Waterfront Urban Renewal Plan, and the development cannot proceed as planned without the replacement of the existing lines, the effect of the development of site must be evaluated as an indirect effect. The existing stormwater runoff from the site is part of the environmental baseline. Any change in stormwater runoff as a result of the proposed future development of the site is an indirect effect. The site is currently an abandoned industrial site with no vegetation. While the site does not support properly functioning habitat conditions, the proposed development will intensify the usage of the site. A review article by Paul and Meyer (2001) discussed the pervasive effects of increased impervious surface on water quality, hydrology and stream geomorphology. For this site, NOAA Fisheries' greatest concern is the incremental negative effects the development will have on water quality in the Willamette River. As stated above, water quality in the Willamette River is currently degraded, and development of the site will continue that trend unless adequate stormwater treatment and riparian plantings are incorporated into the site development. To mitigate for this, Schnitzer Investment Corporation has committed to treating stormwater on site in accordance with the regulations in place at the time a building permit is requested.

Additionally, development of the site will likely prevent long-term recovery of riparian and floodplain functions unless the preliminary greenway designs proposed by the City of Portland and its consultants are modified to incorporate ecological considerations. No commitments have been made concerning the future design of the narrow riparian strip because the decision has been deferred until the greenway design has been prepared for the entire South Waterfront development region although options include pavement (for emergency access, vehicles, bikes,

and pedestrians), low-growing vegetation to allow for continuous viewing of the river, overlooks, ornamental gardens, stormwater treatment swales, and trees.

2.1.6 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation." Future Federal actions, including the ongoing
operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

Private development of commercial and residential development is planned for the entire South Waterfront area. The City of Portland is working with private developers to develop plans for the site, and funding sources will likely include both private and public sources. Approximately 10,000 jobs are being planned for the area in the next ten years. The proposed South Waterfront development will change the intensity of land use in the vicinity, resulting in increased vehicular traffic and increased population density. Most of the land area is currently vacant but was previously developed for industrial uses. Some of the sites are considered 'brownfields' because of contaminated soils due to past use. This will affect how the sites are developed, and will limit degree to infiltration encouraged in the area for stormwater treatment. Nevertheless, the City of Portland is committed to fully treating stormwater from the streets and public areas on-site, and incorporating designs from Metro's Green Streets manual and using low impact development concepts. They are also encouraging future developers in the South Waterfront area to incorporate these ideas as well.

Any change in stormwater runoff as a result of future re-development in the SouthWaterfront area is a cumulative effect for purposes of this analysis. Continued releases of the present levels of effluents from the new outfalls will maintain inadequate baseline conditions in the Willamette River, while increased discharge of stormwater that could occur with re-development would further degrade aquatic habitat conditions. Increased stormwater discharges could cause adverse effects to riparian and floodplain habitat, depending on the design of future stormwater management and the weight given to ecological considerations during completion of the final greenway design for the entire South Waterfront development region.

2.1.7 Conclusion

After reviewing the best available scientific and commercial information available regarding the current status of the LCR chinook salmon, UWR chinook salmon, LCR steelhead, and UWR steelhead ESUs considered in this consultation, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NOAA Fisheries' opinion that the action, as proposed, is not likely to jeopardize the continued existence of these species.

Our conclusions are based on the following considerations: (1) In-water work will occur between July 1 and October 31 and/or between December 1 and January 31, when the fewest listed species are likely to be present in the project area; (2) pollution and erosion control measures will be in place to prevent pollution related to construction activities, including pollution related to fueling, operation and maintenance related to vehicles and equipment; (3) stormwater management of the site will reduce the risk of increased discharge of pollutants into the Willamette River; and (4) the effects of the outfall construction are not expected to 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 scale.

2.1.8 Conservation Recommendations

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

> The COE should advise the project applicants that compliance with terms and conditions in the incidental take statement issued with this biological opinion does not remove the prohibition against take that may result from the current level of discharge of pollutants from the new outfalls. Further, the COE should encourage the applicants to: (1) Pursue an appropriate form of long-term incidental take coverage for the outfall discharges and (2) complete early coordination with NOAA Fisheries to include ESA compliance as part of the planning process to prepare and evaluate alternatives for further redevelopment of the South Waterfront area.

To keep NOAA Fisheries informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and steelhead or their habitats, we request notification of the achievement of any conservation recommendations when the COE submits the monitoring report for this Opinion.

2.1.9 Reinitiation of Consultation

Consultation must be reinitiated if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals that effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

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].

An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that issuing a permit to construct the North Macadam stormwater outfalls is reasonably certain to result in incidental take of ESA-listed species. Individual fish will be injured or harmed by in-water work, displacement from the action area during construction, by temporal or permanent loss of riparian and aquatic habitat features attributable to the physical presence of the outfall structures themselves, and by an increase in pollutant discharge (stormwater) associated with future re-development of the site. The potential adverse effects of this project on fish populations are largely unquantifiable, and NOAA Fisheries does not expect them to be measurable in the long term. The extent of incidental take is limited to that occurring due to outfall construction only and within the action area in the Willamette River, beginning 100 feet upstream of the construction site and extending 300 feet downstream.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The COE has the continuing duty to regulate the activities covered in this incidental take statement. If the COE fails to require the contractor 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(a)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. The COE shall:

1. Ensure completion of a comprehensive monitoring and reporting program to confirm this Opinion is meeting its objective of minimizing take from permitted activities.

2. Avoid or minimize incidental take from general construction by excluding unauthorized permit actions and applying permit conditions that avoid or minimize adverse effects to riparian and aquatic systems.

3. Ensure that the proposed re-development of the site and subsequent stormwater management do not contribute to the decline in water quality in the Willamette River.

2.2.3 Terms and Conditions

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

1. To implement reasonable and prudent measure #1 (monitoring), the COE shall ensure that the permittee submits the following monitoring reports to the COE and NOAA Fisheries:

    a. Written planning requirements. Before beginning any work below bankfull elevation,[3] the permittee will provide a copy of the written plans for site restoration acitivites, pollution and erosion control, and stormwater management, to the Oregon Office of NOAA Fisheries at the address below. The Plan must address aspects of the construction of the stormwater pipe and outfall and decommissioning of the old stormwater pipes and outfall, including mobilization, demobilization, and site restoration activities. Plan requirements are described below.

        Oregon State Director
        Habitat Conservation Division
        National Marine Fisheries Service
        Attn: 2002/01365
        525 NE Oregon Street
        Portland, OR 97232

[3] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

b. Implementation monitoring report required. The permittee submits an implementation monitoring report to the COE and to NOAA Fisheries, at the address above, within 120 days of completing all in-water work. The monitoring report will describe the permittee's success meeting his or her permit conditions.

i. If the in-water work will not be completed by January 31 following the year during which consultation was completed, the permittee shall submit a report to the COE and to NOAA Fisheries by January 31 saying why the in-water work was not completed.

ii. If the monitoring report or explanation of why work was not completed is not received by the COE and NOAA Fisheries by January 31, NOAA Fisheries may 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.

iii. Submit a copy of the monitoring report or explanation of why work was not completed to the Oregon Office of NOAA Fisheries, at the address above.

c. Implementation monitoring report contents. The monitoring report will include the following information:

iv. Project identification.

(1) Permittee name, permit number, and project name.

(2) Project location, including any compensatory mitigation site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.

(3) COE contact person.

(4) Starting and ending dates for work completed.

v. Habitat conditions. Photos of habitat conditions at the project site, before, during, and after project completion.[4]

(1) Include general views and close-ups showing details of the project and project area, including pre and post construction.

(2) Label each photo with date, time, project name, photographer's name, and a comment about the subject.

vi. Site restoration.

(1) The name and address of the party(s) responsible for meeting each component of the site restoration plan.

(2) Performance standards for determining compliance.

(3) Any other pertinent requirements such as the provisions for short and long-term maintenance of the restoration or mitigation site.

(4) A provision for COE certification that all action necessary to carry out each component of the restoration or mitigation plan is completed, and that the performance standards are achieved.

[4] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

vii. Project data.

(1) Work cessation. Dates work ceased due to high flows, if any.

(2) Pollution control. A summary of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.

(3) Site restoration. Photo or other documentation that site restoration performance standards were met.

(4) Annual report on site restoration monitoring. In addition to the 120-day implementation report, the permittee will submit an annual report to the COE and NOAA Fisheries by December 31 that includes the date of each visit to a restoration site, site conditions on that date, and any corrective action taken as a result of that visit. Reporting will continue from year to year until the COE certifies that site restoration performance standards have been met.

d. Reinitiation contact. To reinitiate consultation, contact the Oregon Office of NOAA Fisheries, at the address above.

2. To implement reasonable and prudent measure #2 (construction-related activities), the COE shall:

a. Site restoration. Prepare and carry out a written site restoration plan as necessary to ensure that all streambanks, soils and vegetation disturbed by the project are cleaned up and restored. Areas of the site that will be part of the future development do not need to be restored. Submit a copy of the written site restoration plan to the COE and to the Oregon Office of NOAA Fisheries, at the address above, before beginning work below bankfull elevation.

i. General considerations.

(1) Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (*e.g.*, large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

(2) Streambank shaping. Restore damaged streambanks to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (*e.g.*, a natural rock wall).

(3) Revegetation. Replant each area requiring revegetation before the first April 15 following construction. Use a diverse assemblage of species native to the project area or region, including grasses, forbs, shrubs and trees. Noxious or invasive species may not be used.

(4) Pesticides. Take of ESA-listed species caused by any aspect of pesticide use is not included in the exemption to the ESA take

prohibitions provided by this incidental take statement. Pesticide use must be evaluated in an individual consultation, although mechanical or other methods may be used to control weeds and unwanted vegetation.

(5) Fertilizer. Do not apply surface fertilizer within 50 feet of any stream channel.

(6) Fencing. Install fencing as necessary to prevent access to revegetated sites by unauthorized persons.

ii. Plan contents. Include each of the following elements:

(1) Responsible party. The name and address of the party(s) responsible for meeting each component of the site restoration requirements, including providing and managing any financial assurances and monitoring necessary to ensure restoration success.

(2) Performance standards. Use these standards to help design the site restoration plan and to assess whether the restoration goal is met. While no single criterion is sufficient to measure success, the intent is that these features should be present within reasonable limits of natural and management variation.

(a) Bare soil spaces are small and well dispersed.

(b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basins, is absent or slight and local.

(c) If areas with past erosion are present, they are completely stabilized and healed.

(d) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present.

(e) Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.

(f) Vegetation structure is resulting in rooting throughout the available soil profile.

(g) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.

(h) High impact conditions confined to small areas necessary access or other special management situations.

(i) Streambanks have less than 5% exposed soils with margins anchored by deeply rooted vegetation or coarse-grained alluvial debris.

(j) Few upland plants are in valley bottom locations, and a continuous corridor of shrubs and trees provide shade for the entire streambank.

(3) Work plan. Include a written work plan as part of the site restoration plan with sufficient detail to include a description of the following elements, as applicable.
(a) Boundaries for the restoration area.
(b) Restoration methods, timing, and sequence.
(c) Water supply source, if necessary.
(d) A plan to control exotic invasive vegetation.
(e) Site management and maintenance requirements.

b. Minimum area. Confine construction impacts to the minimum area necessary to complete the project.

c. Timing of in-water work. Complete all work below the bankfull elevation between July 1 to October 31 and/or December 1 - January 31, unless otherwise approved in writing by NOAA Fisheries.

d. Cessation of work. Cease project operations under high flow conditions that may result in inundation and of the project area, except for efforts to avoid or minimize resource damage.

e. Pollution and Erosion Control Plan. Prepare and carry out a written pollution and erosion control plan to prevent pollution caused by surveying or construction operations. Submit a copy of the written plan to the COE and to the Oregon Office of NOAA Fisheries, at the address above, before beginning work below bankfull elevation.

i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
(1) The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.
(2) Practices to prevent erosion and sedimentation associated with construction sites, equipment and material storage sites, fueling operations, and staging areas.
(3) Practices to confine, remove and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.
(4) A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
(5) A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
(6) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[5]

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

(2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

f. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, vehicle wash water, drilling fluids) as follows:

i. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water, including any contaminated water produced by drilling, using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.

iii. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the 2-year floodplain.

iv. Drilling discharge. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be completely isolated to prevent drilling fluids or other wastes from entering the stream.

(1) All drilling fluids and waste will be completely recovered then recycled or disposed to prevent entry into flowing water.

(2) Drilling fluids will be recycled using a tank instead of drill recovery/recycling pits, whenever feasible.

(3) When drilling is completed, attempts will be made to remove the remaining drilling fluid from the sleeve (e.g., by pumping) to reduce turbidity when the sleeve is removed.

g. Preconstruction activity. Complete the following actions before significant[6] alteration of the project area.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian

[5] 'Working adequately' means that project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

[6] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[7]).

(2) An oil-absorbing, floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

h. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally sized, low ground pressure equipment).

i. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows:

(1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.

(2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland, unless otherwise approved in writing by NOAA Fisheries.

(3) Inspect all vehicles operated within 150 feet of any stream, waterbody or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by COE or NOAA Fisheries.

(4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed.

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

i. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.

[7] When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

ii. Drilling and sampling. If drilling, boring or jacking is used, the following conditions apply.

(1) Sampling and directional drill recovery/recycling pits, and any associated waste or spoils will be completely isolated from surface waters, off-channel habitats and wetlands. All waste or spoils must be covered if precipitation is falling or imminent. All drilling fluids and waste will be recovered and recycled or disposed to prevent entry into flowing water.

(2) If a drill boring conductor breaks and drilling fluid or waste is visible in water or a wetland, all drilling activity will cease pending written approval from NOAA Fisheries to resume drilling.

iii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the project outside the riparian area.

j. Use of large wood and rock. Whenever possible, use large wood as an integral component of all streambank protection treatments.[8] Avoid or minimize the use of rock, stone and similar materials. Large wood will be intact, hard, and undecayed to partly decaying with untrimmed root wads to provide functional refugia habitat for fish. Use of decayed or fragmented wood found laying on the ground or partially sunken in the ground is not acceptable. Use of rock around the outfall structure to ensure long-term stability of the structure is acceptable.

3. To implement reasonable and prudent measure #3 (stormwater management), the COE shall ensure that the permittee prepares and implements a stormwater management plan for the site post-development.

a. Plan contents. The goal is to avoid and minimize adverse effects due to the quality of stormwater runoff for the site post-development. The plan will include a system of management practices (refer to the City of Portland Stormwater Manual) and, if necessary, structural facilities, designed to complete the following functions:

i. Minimize, disperse, and infiltrate stormwater runoof onsite using sheet flow across permeable vegetated areas to the maximum extent possible without causing flooding, erosion impacts, or long-term adverse effects to groundwater.

ii. Pretreat stormwater from pollution generating surfaces before infiltration or discharge into a freshwater system to minimize any nonpoint source

[8] See, e,g, Washington Department of Fish and Wildlife, Washington Department of Transportation, and Washington Department of Ecology, *Integrated Streambank Protection Guidelines*, Appendix I:Anchoring and placement of large woody debris (April 2003) (http://www.wa.gov/wdfw/hab/ahg/ispgdoc.htm); Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (http://www.odf.state.or.us/FP/RefLibrary/RefsList.htm).

pollutant likely to be present in the volume of runoff predicted from a 6-month, 24-hour storm.[9]

b. Incorporate concepts from low impact development designs (e.g., permeable pavement, planter boxes) to the maximum extent feasible based on soil conditions.

3. MAGNUSON-STEVENS ACT

3.1 Magnuson-Stevens Fishery Management and Conservation Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

1. 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 (§305(b)(2)).

2. NOAA Fisheries must provide conservation recommendations for any Federal or state action that would adversely affect EFH (§305(b)(4)(A)).

3. Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (§305(b)(4)(B)).

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

[9] A 6-month, 24-hour storm may be assumed to be 72% of the 2-year, 24-hour amount. See Washington State Department of Ecology (2001), Appendix I-B-1.

fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

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

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of 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 waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable artificial 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 COE.

3.3 Proposed Action

The proposed action is detailed above in section 1.2 of this document. For the purposes of this EFH consultation, the action area is defined as the streambed, streambank and riparian corridor of the Willamette River, extending to the upstream project disturbance limits and downstream one mile below the project disturbance limits. This area has been designated as EFH for various life stages of chinook salmon and coho salmon and starry flounder.

3.4 Effects of Proposed Action

As described in detail in section 2.1.3 of this document, the proposed activities may result in short-term adverse effects to water quality (sediment, chemical contamination, riparian vegetation removal). NOAA Fisheries expects short-term adverse effects from increases in turbidity and the potential for chemical contamination within the action area.

3.5 Conclusion

The proposed action will adversely affect the EFH for chinook and coho salmon and starry flounder.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, 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 COE, all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2.2 and 2.2.3 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 MSA (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 COE must reinitiate EFH consultation with NOAA Fisheries if either 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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