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

Refer to:
OSB2000-0342-FEC

February 14, 2002

Mr. Fred P. Patron
Senior Transportation Planning Engineer
Federal Highway Administration, Oregon Division
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation, Hall Boulevard Widening Project, Fanno Creek Watershed, Washington County, Oregon

Dear Mr. Patron:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) for the Hall Boulevard Widening Project, Fanno Creek Watershed, Washington County, Oregon. NMFS concludes in this Opinion that the proposed action is not likely to jeopardize Upper Willamette River (UWR) steelhead (*Oncorhynchus mykiss*) or UWR chinook salmon (*O. tshawytscha*) or destroy or adversely modify designated critical habitat. Pursuant to section 7 of the ESA, NMFS has included reasonable and prudent measures with non-discretionary terms and conditions that NMFS believes are necessary and appropriate to minimize the potential for incidental take associated with this project. This Opinion also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR Part 600).

Please direct any questions regarding this letter to Art Martin of my staff in the Oregon Habitat Branch at 503.231.6848.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

cc:
Rose Owens, ODOT
Greg Robart, ODFW
Diana Hwang, USFWS
Joel Howie, City of Beaverton

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

BIOLOGICAL OPINION

Hall Boulevard Widening Project
Washington County, Oregon

Agency: Federal Highway Administration

Consultation Conducted by: National Marine Fisheries Service,
Northwest Region

Date Issued: February 14, 2002

Issued by: for Michael R Crouse

D. Robert Lohn
Regional Administrator

Refer to: OSB2000-0342-FEC

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1. ENDANGERED SPECIES ACT

1.1. Background

On November 28, 2000, the National Marine Fisheries Service (NMFS) received a biological assessment (BA) and a request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for the Proposed Widening of Hall Boulevard Project. Hall Boulevard is located in the City of Beaverton, Washington County, Oregon. The project applicant is the City of Beaverton (City). The City contracted with David Evans and Associates for design of the bridge widening and the City will administer the construction contract. As a result of discussions between NMFS and the action agency, NMFS received an amended BA and a request from the FHWA for ESA section 7 formal consultation for the project on December 29, 2000. The NMFS determined that the amended BA did not provide enough information about the proposed stormwater facilities to complete the consultation process. On January 7, 2002, NMFS received a letter with technical attachments describing the proposed stormwater treatment facility, which has been designed to avoid and minimize potential adverse effects from stormwater discharge. This biological opinion (Opinion) is based on the information presented in the amended BA, technical attachments, site visits, and discussions with the City. This consultation is undertaken pursuant to section 7(a)(2) of the ESA and its implementing regulations (50 CFR Part 402), and pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600).

This Opinion considers the potential effects of the proposed action on Upper Willamette River (UWR) steelhead (*Oncorhynchus mykiss*) and UWR chinook salmon (*O. tshawytscha*) which occur in the proposed project area. The UWR steelhead were listed by the National Marine Fisheries Service (NMFS) as threatened under the Endangered Species Act (ESA) on March 25, 1999 (64 FR 14517) and the UWR chinook salmon on March 24, 1999 (64 FR 14308). NMFS designated critical habitat for these species on February 16, 2000 (65 FR 7764) and protective regulations were issued on July 10, 2000 (65 FR 42422).

1.2. Proposed Action

The City proposes to widen the bridge on Hall Boulevard over Fanno Creek to facilitate the addition of bike lanes. This will involve demolition and removal of existing sidewalks and railings, construction of cast-in-place wing walls, extension of existing pile caps, adding one prestressed concrete slab to either side of the existing slabs, placement of 1233 cubic yards of additional riprap for scour protection, and installation of a stormwater treatment system. The project is located within the Fanno Creek watershed. Fanno Creek flows down into the Tualatin River, Willamette River and Columbia River and on into the Pacific Ocean.

The proposed action will widen the existing bridge along the same basic alignment. No temporary detour or work bridges will be needed to complete construction. During the

construction process, traffic control will be staged in such a manner to facilitate staging of the project equipment along the existing roadway adjacent to the bridge. Approximately 233 cubic yards of class 100 riprap will be placed under the bridge using a spiderhoe or like equipment below the bankfull elevation[1], requiring work isolation and potential fish rescue and salvage. The placement of this riprap will protect the new, wider bridge foundation. Of the estimated 233 cubic yards of riprap within critical habitat, 178 cubic yards of riprap will occur below the ordinary high water (OHW) elevation, also known as bankfull elevation) resulting in net increase of riprap below the OHW.

The project BA, as amended, includes a set of best management practices (BMPs) designed to minimize adverse effects on steelhead, salmon and their habitats. These BMPs are described on pages 15-22 of the BA. Specific BMPs for in-water work, bank work, clearing and grubbing, bridge expansion, erosion control, hazardous materials, compensatory mitigation, and site-specific conservation measures are included. The NMFS regard these BMPs as integral components of the project and considers them to be part of the proposed action.

Direct effects to listed species will occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects to listed species may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities include the immediate watershed where the bridge widening will occur, and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and streambank of Fanno Creek extending upstream and downstream one mile below the project disturbance limits. Other areas of the Fanno Creek watershed are not expected to be directly affected. There will be temporary indirect effects (temperature modification and sedimentation) to Fanno Creek caused by the in-water work and general riparian and bank disturbance within the project area.

All in-water work activities will occur during the standard in-water work timing guideline[2] of July 1 through September 30.

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

[2]Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 4pp(June 200) (Identifying work periods with the least impact on fish) (http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

1.3. Biological Information and Critical Habitat

1.3.1 Upper Willamette River Steelhead

The UWR steelhead ESU occupies the Willamette River and tributaries upstream of Willamette Falls, extending to and including the Calapooia River. These major river basins include more than 12,000 kilometers of spawning and rearing streams in Oregon. Rivers that contain naturally spawning winter-run steelhead include the Tualatin, Molalla, Santiam, Calapooia, Yamhill, Rickreall, Luckiamute, and Mary's, although the origin and distribution of steelhead in these basins is being debated. Early migrating winter and summer steelhead have been introduced into the upper Willamette basin, but those components are not part of the ESU.

Native winter steelhead within this ESU have been declining since 1971 and have exhibited large fluctuations in abundance. In general, native steelhead of the upper Willamette Basin are late-migrating winter steelhead, entering freshwater primarily in March and April. This atypical run timing appears to be an adaptation for ascending Willamette Falls, which functions as an isolating mechanism for UWR steelhead. Reproductive isolation resulting from the falls may explain the genetic distinction between steelhead from the upper Willamette Basin and those in the lower river. UWR late-migrating steelhead are ocean-maturing fish. Most return at age 4, with a small proportion returning as 5-year-olds (Busby et al. 1996).

Willamette Falls is a known migration barrier. Winter steelhead and spring chinook salmon historically occurred above the falls, whereas summer steelhead, fall chinook, and coho salmon did not. Detroit and Big Cliff dams cut off 540-kilometers of spawning and rearing habitat in the North Santiam River. In general, habitats in this ESU have been substantially simplified since the 1800s by removal of large woody debris to increase the river's navigability.

The UWR steelhead are historically known to occupy the action area. Both adult and juvenile UWR steelhead are present and migrate through the Fanno Creek Watershed[3].

1.3.2 Upper Willamette River Chinook Salmon

The UWR chinook ESU includes native spring-run populations above Willamette Falls and in the Clackamas River. In the past, it included sizable numbers of spawning salmon in the Santiam River, the middle fork of the Willamette River, and the McKenzie River, and smaller numbers in the Molalla River, Calapooia River, and Albiqua Creek. Although the total number of fish returning to the Willamette in 2001 was relatively high (80,300), only about 5,800 fish

[3]Telephone conversation with Greg Robart, ODFW (February 25, 2000)(confirming presence of UWR steelhead in Fanno Creek), cited in the BA at p.6.

spawned naturally in the ESU. The McKenzie River and Clackamas River support the only substantial remaining naturally reproducing populations in the ESU[4].

No direct estimate of the size of the chinook salmon runs in the Willamette River basin was made before the 1940's. McKernan and Mattson (1950) present anecdotal information that the native American fishery at the Willamette Falls may have yielded 2,000,000 pounds of salmon (454,000 fish, each weighing 20 pounds). Based on egg collections at salmon hatcheries, Mattson (1948) estimates that the spring chinook salmon run in the 1920's may have been five times the run size of 55,000 fish in 1947, or 275,000 fish. Much of the early information on salmon runs in the upper Willamette Basin comes from operation reports of state and Federal hatcheries.

Fish in this ESU are distinct from those of adjacent ESUs in life history and marine distribution. The life history of chinook salmon in the UWR ESU includes traits from both ocean and stream-type development strategies. Coded-wire-tag (CWT) recoveries show that the fish travel to marine waters off British Columbia and Alaska. More Willamette River fish are, however, recovered in Alaskan waters than fish from the Lower Columbia River ESU. UWR chinook mature in their fourth or fifth year. Historically, 5-year-old fish dominated the spawning migration runs; recently, however, most fish have matured at age 4. The timing of the spawning migration is limited by Willamette Falls. High flows in the spring allow access to the upper Willamette River basin, whereas low flows in the summer and autumn prevent later-migrating fish from ascending the falls. The low flows may serve as an isolating mechanism, separating this ESU from others nearby.

Hatchery production in the basin began in the late nineteenth century. Eggs were transported throughout the basin, resulting in current populations that are relatively homogeneous genetically (although still distinct from those of surrounding ESUs). Hatchery production continues in the Willamette, with an average of 8.4 million smolts and fingerlings released each year into the main river or its tributaries between 1975 and 1994. Hatcheries are currently responsible for most production (90% of escapement) in the basin. The Clackamas River currently accounts for about 20% of the production potential in the Willamette River basin, originating from one hatchery plus natural production areas that are primarily above the North Fork Dam. The interim escapement goal for the area above North Fork Dam is 2,900 fish (Oregon Department of Fish and Wildlife (ODFW) 1998b). However, the system is so heavily influenced by hatchery production that distinguishing spawners of natural stock from hatchery origin fish is difficult. Approximately 1,000 to 1,500 adults have been counted at the North Fork Dam in recent years.

Harvest on this ESU has been high, both in the ocean and in river. The total in-river harvest below the falls from 1991 through 1995 averaged 33% and was much higher before then. Ocean

[4]Telephone conversation with Curt Melcher, ODFW (January 18, 2002) (from 2001 run size and escapement calculations)

harvest was estimated as 16% for 1982 through 1989. The ODFW (1998a) says that total (marine and freshwater) harvest rates on UWR spring-run stocks were reduced considerably for the 1991 through 1993 brood years, to an average of 21%. Recent efforts to mark all hatchery spring-run chinook salmon by removal of the adipose fin, and execution of selective sport and commercial fisheries in the basin, have greatly decreased incidental mortality rates on wild spring-run chinook.

The UWR chinook salmon are known to occur in the mainstem Tualatin River near the confluence with Fanno Creek[5]. No known passage barriers exist to preclude adult or juvenile UWR chinook from migrating into or utilizing the action area for spawning, rearing or migration. Both adult and juvenile chinook salmon have been observed entering tributary streams during migration for brief periods to seek refuge from mainstem flood conditions or thermal stress, among other reasons.

1.4. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). The NMFS 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, NMFS 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, NMFS 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 NMFS finds that the action is likely to jeopardize the listed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. If NMFS concludes that the action will destroy or adversely modify critical habitat, it must identify any reasonable and prudent measures available.

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[5]Telephone conversations with Greg Robart and Dave Ward, ODFW (February 25, 2000)(confirming presence of UWR chinook salmon at the confluence of Fanno Creek and the Tualatin River), cited in the BA at p.5.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of UWR steelhead and UWR chinook salmon under the existing environmental baseline.

1.4.1. Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed steelhead and chinook salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list UWR steelhead and chinook salmon for ESA protection and also considers new available data that is relevant to the determination (Busby et al. 1996 and Myers et al. 1998) .

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

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration, spawning, holding, and rearing. The steady decline in abundance of the UWR steelhead and UWR chinook salmon within the Fanno Creek watershed and the ESU since the species was listed remains of concern. Although escapement of UWR steelhead and chinook salmon over Willamette Falls into the Upper Willamette basin have slightly increased in past decade, the longer term trend is a decline over time. Specific escapement goals for Fanno Creek have not been set and specific escapement monitoring has not been done in Fanno Creek.

1.4.2. Environmental Baseline

Human activities have had enormous effects on the salmonid populations in the Willamette drainage. First, the Willamette River, once a highly braided river system, has been dramatically simplified through channelization, dredging, and other activities that have reduced rearing habitats (i.e., stream shoreline) by as much as 75%. In addition, the construction of 37-dams in the basin has blocked access to over 700-km of stream and river spawning habitat. The dams also alter the temperature regime of the Willamette River and its tributaries, affecting the timing of development of naturally-spawned eggs and fry. Water quality is also affected by development and other economic activities. Agricultural and urban land uses on the valley floor, and timber harvesting in the Cascade and Coast ranges, contribute to increased erosion and

sediment load in Willamette River basin streams and rivers. Finally, since at least the 1920's, the lower Willamette River has suffered municipal and industrial pollution.

The dominant land uses in the Fanno Creek Watershed are urban development and to lesser degree agriculture. Water quality monitoring within Fanno Creek indicates elevated temperatures and suspended solids within the project vicinity. The upper Fanno Creek watershed is less urbanized and is likely to have slightly better water quality more suitable for year around rearing of juvenile salmonids than the action area.

Fanno Creek has degraded habitat resulting from urban development, agriculture practices, draining and filling of wetlands, forestry practices, and an extensively developed road network drastically altering the natural drainage system. The large woody debris and pool frequency habitat indicators are not properly functioning within the action area because of chronic habitat degradation. In addition, the following environmental baseline indicators are also not functioning properly or at risk: Temperature, sediment/turbidity, chemical contamination/nutrients, substrate, pool frequency, width to depth ratio, streambank condition, increase in drainage network, road density and location, disturbance history and riparian reserves.

Based on the best available information on the current status of UWR steelhead and UWR chinook salmon range-wide, the population status, trends, and genetics, and the poor environmental baseline conditions within the action area, NMFS concludes that the biological requirements of UWR steelhead and UWR chinook salmon within the action area are not currently being met. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of UWR steelhead and UWR chinook salmon.

1.5 Analysis of Effects

1.5.1 Effects of the Proposed Action

Creeks and rivers are dynamic systems that naturally alter their courses in response to many physical processes. Roadways and other structures constructed along waterways are subject to flooding and undercutting as a result of these natural changes in the stream course. Structural hardening of embankments is the traditional means of protecting these structures along waterways. Hardened embankments simplify stream channels, alter hydraulic processes, and prevent natural channel adjustments (Spence *et al*. 1996). Moreover, embankment hardening may shift the erosion point either upstream or downstream of the project and accelerate stream velocity. As amplified erosive forces attack different locations and landowners respond with more bank hardening, the river eventually attains a continuous fixed alignment lacking habitat complexity (USACE 1977).

Fish habitats are enhanced by diversity of conditions at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature and

stabilizes stream banks. Overhanging branches provide cover from predators. Insects and other invertebrates that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, shelter from swift currents during high flows, retain bed load sediment, create pools, and reduce flow velocity.

The most desirable method of bank protection is to retain or restore vegetation. However, vegetation alone can seldom stabilize banks steeper than 3:1 (horizontal:vertical) or areas of high velocity (USACE 1977). Native vegetation viability is often limited under and around bridges due primarily to low light conditions. Although they are biologically less desirable, fixed structures provide the most reliable means of bank stability.

The aquatic habitat elements that can be affected by the proposed bridge widening include water quality (sediment and chemical contamination), hydrology, riparian vegetation, and stream hydraulics. Juvenile UWR steelhead and UWR chinook salmon rearing in the Fanno Creek reach may be directly and indirectly affected by the proposed action.

Sediment. Excavation of bank material in the wetted channel will temporarily increase releases of sediment. An increase in turbidity from suspension of fine sediments can adversely affect fish and filter-feeding macro-invertebrates downstream of the work site. At moderate levels, turbidity has the potential to reduce primary and secondary productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult fish (Spence *et al.* 1996, Berg and Northcote 1985).

Transportation of sediments to the stream is also possible. Upland excavation will expose and dislodge soils, increasing erosion and stream turbidity during rainfall.

To minimize the potential for increased turbidity and disturbance of fish, in-water work will occur only during the ODFW recommended in-water work window (July 1 to September 30) or as approved by NMFS and ODFW biologists. During this window, creek flows are typically low, fish presence is reduced, and rainfall is minimal. In-water work area isolation will allow the work to occur in the dry, thereby reducing turbidity and disturbance of fish. During this period, rearing juveniles may be present if water temperatures remain within the tolerance range of local individuals, but adult spawning and egg incubation would not be occurring. The precipitation probability increases greatly after September 30.

Chemical Contamination. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, etc., which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff

1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and non target riparian vegetation (Spence *et al.* 1996).

To minimize the potential for chemical contamination and disturbance of fish, in-water work will occur only during the ODFW recommended in-water work window (July 1 to September 30) or as approved by NMFS and ODFW biologists. During this window, creek flows are typically low, fish presence is reduced, and rainfall is minimal. In-water work area isolation will allow the work to occur in the dry, thereby reducing indirect (chemical contaminants) from entering the actively flowing water and direct impacts to fish. The applicant does not propose the use of herbicides.

Water Quality Stormwater Effects. The potential exists for an increase in runoff, high in pollutants, from the proposed 0.30 acres of new impervious surface into Fanno Creek (Booth and Jackson 1997). However, the proposed stormwater runoff treatment system will more than offset any potential adverse effects to water quality as a result of the proposed action. The proposed stormwater treatment system will treat stormwater runoff from 4.0 acres of new and existing impervious surfaces. This stormwater treatment system includes construction of a Stormfilter vault designed to remove up to 70% of the total suspended solids (TSS), oil, grease and floatables from storms up to and including a water quality storm event. The fully treated stormwater then discharges into an existing riparian-associated wetland. The proposed project is expected have a net beneficial effect on water quality in the long term.

Hydrologic Stormwater Effects. Reduced evapotransporation and infiltration opportunities may increase the magnitude of peak discharge and decrease summer base flow from the proposed 0.30 acres of new impervious surface (Booth and Jackson 1997). However, the proposed stormwater runoff treatment system will more than offset any potential adverse effects to hydrology from the proposed action.

This stormwater treatment system includes construction of an inline 170.6-foot long, 42-inch diameter detention pipe that will detain more than the expected total volume of stormwater runoff from the proposed 0.30 acres of new impervious surface during a 25-year storm event. Stormwater runoff from this detention facility then passes through the Stormfilter vault as described above. After water quality treatment, the stormwater runoff will be discharged to and work its way through a 164-foot long existing riparian-associated wetland before entering Fanno Creek. Stormwater runoff will evapotransporate or infiltrate through natural processes in the wetland. The balance of pre-project evapotransporation, infiltration and discharge rates compared with post-project rates will likely result in no net increase in magnitude or duration of peak discharge from the 10-year storm event and no net adverse affect on summer base flow in the long term.

Riparian Vegetation Removal. Although Fanno Creek does not have an adequate riparian buffer within the action area, the riparian does provide some functional benefit to stream habitat.

Throughout the action area, the riparian area contains a mix of native and non-native invasive species.

Woody riparian vegetation provides large wood to the stream, which encourages the creation of rearing and spawning areas. The 0.09 acre of riparian vegetation that will be removed as result of the proposed action consists of only non-native invasive species, primarily Himalayan blackberry and reed canary grass, and will not result in the decrease of any future recruitment of large wood to Fanno Creek. However, riparian vegetation also provides water quality functions (e.g. temperature control, nutrient transformation), bank stability, detritus (insect and leaf input, small wood for substrate for insects, etc.), microclimate formation, floodplain sediment retention and vegetative filtering, and recharge of the stream hyporheic zone. The loss of vegetation along Fanno Creek may reduce the ability of the remaining riparian area to support natural stream processes, including processes essential to supporting salmon in the short term.

The City has proposed, as part of the action, to mitigate the removed riparian vegetation at a 1:1 ratio, on an 0.09 acre strip of degraded riparian area adjacent to and upstream of the action area along the west bank of Fanno Creek. The riparian mitigation will include the removal and control of all non-native noxious and invasive plant species and the planting of 35 native riparian trees and 324 native riparian shrubs. Although the plantings will offset the loss of current riparian vegetation, it will be several years before the new plantings will help cool and filter the water through shading and runoff interception.

Stream Hydraulics. The placement of 233 cy of Class 100 riprap for scour protection associated with the widened bridge, of which 178 cy will be placed below the bankfull elevation[6], may further simplify instream habitat and increase water velocity at the bridge site. The City proposes, as part of the action, to use large riprap at the toe of slope to create interstitial spaces and complex flow patterns. This is intended to create hydraulic refugia habitat minimizing adverse effects from instream habitat simplification in the long term.

1.5.2 Effects on Critical Habitat

The NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat for UWR steelhead and UWR chinook salmon consists of all waterways below naturally impassable barriers including the project area. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient/chemical regulation, streambank stability, and input of large woody debris/organic matter.

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

Potential short-term adverse effects of the proposed action include turbidity, chemical contamination, and debris contribution to the waterway during construction and from precipitation during construction. These effects would be largely avoided by project timing (i.e., dry season) and work area isolation, as described above in *Effects of the Proposed Action*.

Long-term beneficial effects resulting from improved water quality and hydrologic conditions as a result of the proposed stormwater treatment system and riparian vegetation mitigation over baseline conditions. Potential long-term adverse effects on stream habitats will be avoided or minimized by the placement of rock to enhance stream hydraulics at the micro-habitat scale.

1.5.3. Cumulative Effects

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

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

1.6. Conclusion

The NMFS has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of UWR steelhead and UWR chinook salmon or result in the destruction or adverse modification of critical habitat. The NMFS used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NMFS applied its evaluation methodology (NMFS 1996) to the proposed action and found that it could cause slight degradation of anadromous salmonid habitat due to increases in sedimentation and turbidity. Furthermore, NMFS expects that construction noise and work isolation activities could alter normal feeding and sheltering behavior of juvenile UWR steelhead and UWR chinook salmon should any be present in the action area during the proposed action. These effects will be temporary and NMFS does not expect them to kill or injure individual salmonid.

Our conclusions are based on the following considerations: (1) Most of the proposed work will occur outside of Fanno Creek (i.e., in the dry), (2) in-water work will occur during the Oregon Department of Fish and Wildlife's preferred work window of July 1-September 30, which is expected to minimize the likelihood of UWR steelhead and UWR chinook salmon presence in the action area due to low flow and warm water conditions, and (3) any increases in

sedimentation and turbidity to the lower portion of Fanno Creek will be short-term and minor in scale and would not change or worsen existing conditions for stream substrate in the action area.

2. INCIDENTAL TAKE STATEMENT

Section 4(d) and Section 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering (64 FR 60727; November 8, 1999). Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. 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 order to implement the reasonable and prudent measures.

2.1 Amount or Extent of the Take

The NMFS anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of UWR steelhead and UWR chinook salmon because of detrimental effects from increased sediment levels and the potential for direct incidental take during in-water work. Based on the paucity of steelhead and chinook salmon in the watershed, the potential for take is low. Effects such as temporarily-elevated temperatures are largely unquantifiable in the short-term, and are not expected to be measurable as long-term harm to steelhead or chinook salmon behavior or population levels. Handling of juvenile steelhead and chinook salmon during the work isolation process may result in incidental take of individuals if adequate water quality allows juvenile salmonids to be present during the construction period. The NMFS anticipates that lethal incidental take of up to 20 juvenile steelhead and/or chinook could occur as a result of the actions covered by this Opinion. The extent of authorized take is limited to UWR steelhead and UWR chinook salmon in Fanno Creek and is limited to that caused by the proposed action within the action area.

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 FHWA

has the continuing duty to regulate the activities covered in this incidental take statement. If the FHWA fails to require the City 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.

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

1. Minimize the likelihood of incidental take from streambank and shoreline protection actions by directing the contractor to use an approach that maximizes ecological functions and the best available bioengineering technology.

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

3. Minimize the likelihood of incidental take from in-water work activities by ensuring that the in-water work activities (toe trench excavation and scour protection placement) are isolated from flowing water.

4. Complete a comprehensive monitoring and reporting program to ensure implementation of these conservation measures are effective in minimizing the likelihood of take from permitted activities.

2.3 Terms and Conditions

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

1. To Implement Reasonable and Prudent Measure #1 (streambank protection), the FHWA shall ensure that:
    a. The use of rock and riprap is avoided or minimized.
        i. Rock will be individually placed in a way that produces an irregularly contoured face to provide velocity disruption. No end dumping will be allowed.
    b. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site or be replaced with a functional equivalent.
    c. Where feasible, the bankline will be revegetated using natural vegetation.

2. To implement Reasonable and Prudent Measure #2 (construction), the FHWA shall ensure that:
   a. Project design. Alteration or disturbance of the stream banks and existing riparian vegetation will be minimized.
   b. In-water work. All work within the active channel will be completed within the following in-water work period (July 1 - September 30) for the site as recommended by ODFW.[7] Extensions of the in-water work period must be approved by NMFS.
   c. Pollution and erosion control plan. A Pollution and Erosion Control Plan (PECP) will be developed for the project to prevent point-source pollution related to construction operations. The PECP will contain the pertinent elements listed below and meet requirements of all applicable laws and regulations:
      i. Methods that will be used to prevent erosion and sedimentation associated with access roads, construction sites, equipment and material storage sites, fueling operations and staging areas.
      ii. A description of the hazardous products or materials that will be used, including inventory, storage, handling, and monitoring.
      iii. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment.
      iv. Measures that will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.
   d. Pre-construction activities. Prior to significant alteration of the action area, the following actions will be accomplished:
      i. Boundaries of the clearing limits associated with site access and construction are flagged to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
      ii. A supply of erosion control materials (e.g., silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.
      iii. All temporary erosion controls (e.g., straw bales, silt fences) are in place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in place at all

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

times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

e. Earthwork. Earthwork, including drilling, blasting, excavation, dredging, filling and compacting, is completed in the following manner:
   i. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained from outside of the riparian area.
   ii. Material removed during excavation will only be placed in locations where it cannot enter streams or other water bodies.
   iii. All exposed or disturbed areas will be stabilized to prevent erosion.
      (1) Areas of bare soil within 150 feet of waterways, wetlands or other sensitive areas will be stabilized by native seeding,[8] mulching, and placement of erosion control blankets and mats, if applicable, quickly as reasonable after exposure, but within 7 days of exposure.
      (2) All other areas will be stabilized as quickly as reasonable, but within 14 days of exposure.
      (3) Seeding outside of the growing season will not be considered adequate for permanent stabilization.

f. Heavy Equipment. Heavy equipment use will be fueled, maintained and stored as follows:
   i. Vehicle staging, maintenance, refueling, and fuel storage areas will be a minimum of 150 feet horizontal distance from any stream.
   ii. All vehicles operated within 150 feet of any stream or water body will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation.
   iii. When not in use, vehicles will be stored in the vehicle staging area.

g. Site restoration. Site restoration and clean-up, including protection of bare earth by seeding, planting, mulching and fertilizing, will be done in the following manner:
   i. Disturbed areas will be planted with native vegetation specific to the project vicinity or the region of the state where the project is located, and will comprise a diverse assemblage of woody and herbaceous species.
   ii. No herbicide application will occur as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.
   iii. No surface application of fertilizer will be used within 50 feet of any stream channel as part of this permitted action.
   iv. Plantings will achieve an 80 percent survival success after three years.

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

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

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

3. To implement Reasonable and Prudent Measure #3 (in-water work area activities) the FHWA shall ensure that the in-water work activities (toe trench excavation and scour protection placement) are conducted are isolated from flowing water.

a. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:

i. Before and intermittently during pumping, attempts will be made to seine and release fish from the work isolation area as is prudent to minimize risk of injury.

ii. Seining will be conducted by, or under the supervision of a fishery biologist experienced in such efforts. Staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

iii. ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever appropriate, to prevent the added stress of an out-of-water transfer.

iv. Seined fish must be released as near as possible to capture sites.

v. The FHWA shall ensure that the transfer of any ESA-listed fish to third parties other than NMFS personnel receives prior approval from NMFS.

vi. The FHWA shall ensure that any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities will be obtained prior to project seining activity.

vii. The FHWA must allow NMFS or its designated representative to accompany field personnel during the seining activity, and allow such representative to inspect the seining records and facilities.

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

b. If the fish salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NMFS 2000):

i. Electrofishing may not occur near listed adults in spawning condition or near redds containing eggs.

ii. Equipment must be in good working condition. Operators must go through the manufacturer's preseason checks, follow all provisions, and record major maintenance work in a log.

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

iv. Measure conductivity and set voltage as follows:

	Conductivity (umhos/cm)	Voltage
(1)	Less than 100	900 to 1100
(2)	100 to 300	500 to 800
(3)	Greater than 300	150 to 400

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

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

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

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

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

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

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

4. To implement Reasonable and Prudent Measure #4 (monitoring and reporting), the FHWA shall ensure that:

   a. Within 120 days of completing the project, the FHWA shall ensure submittal of a monitoring report to NMFS describing the FHWA's success meeting their permit conditions. This report will consist of the following information:

      i. Project identification.
         (1) Project name.
         (2) starting and ending dates of work completed for this project.
         (3) the FHWA contact person.

      ii. Isolation of in-water work area. All projects involving isolation of in-water work areas must include a report of any seine and release activity including:
         (1) The name and address of the supervisory fish biologist;
         (2) methods used to isolate the work area and minimize disturbances to fish species;
         (3) stream conditions prior to and following placement and removal of barriers;
         (4) the means of fish removal;
         (5) the number of fish removed by species;
         (6) the location and condition of all fish released; and
         (7) any incidence of observed injury or mortality.

      iii. Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

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

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

      vi. Photographic documentation of environmental conditions at the project site before, during and after project completion.
         (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.

(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.

(3) Relevant environmental conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

b. Submit monitoring reports to:

National Marine Fisheries Service
Oregon Habitat Branch, Habitat Conservation Division
Attn: OSB2000-0342
525 NE Oregon Street, Suite 500
Portland, Oregon 97232-2778

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

3. MAGNUSON-STEVENS ACT

3.1 Background

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

3.2 Magnuson-Stevens Fishery Conservation and Management Act

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

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

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

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

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

3.3 Identification of EFH

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

3.4 Proposed Actions

The proposed action is detailed above in section 1.2 of this document. The action area includes Fanno Creek from the upstream limit of the proposed action, 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.

3.5 Effects of Proposed Action

As described in detail in section 1.5 of this document, the proposed activities may result in short-term adverse effects to water quality (sediment and chemical contamination). Long-term beneficial effects are likely from greater cross-sectional channel area and improved hydraulic conditions under the new structure.

Effect #1: Turbidity - Excavation and fill of the stream bank in the wetted channel during bridge replacement and installation of the scour protection will result in short-term releases of sediment. An increase in turbidity can impact fish and filter-feeding macroinvertebrates downstream of the work site.

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

Effect #3: Water Quality Stormwater Effects - Water quality will be improved as a result of the stormwater treatment system.

Effect #4: Hydrologic Stormwater Effects - Fanno Creek's current hydrograph should be maintained or improved as a result of the stormwater treatment system.

Effect #5: Riparian Vegetation Removal - Only non-native, non-woody, invasive vegetation will be removed and native riparian trees and shrubs will be planted as part of the compensatory mitigation plan.

Effect #6: Stream Hydraulics - Placement of 233 cy of Class 100 riprap for scour protection associated with the widened bridge, of which 178 cy will be placed below the bankfull elevation[9], may result in further simplification in habitat and increase in water velocity at the bridge site. The project design includes measures that will increase hydraulic refugia and minimize adverse effects from channel simplification.

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

3.6 Conclusion

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

3.7 EFH Conservation Recommendations

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

3.8 Statutory Response Requirement

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

3.9 Consultation Renewal

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

4. LITERATURE CITED

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

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