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**U.S. Army Corps of Engineers,
Seattle District, Regulatory Branch**

**Programmatic Biological Evaluation
for
Activities in the Lower Columbia River,
Washington State
for Species Listed or Proposed by
National Marine Fisheries Service under the Endangered Species Act**

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**Programmatic Biological Evaluation for
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the Endangered Species Act**

I. Executive Summary

The U.S. Army Corps of Engineers, Seattle District, Regulatory Branch (Corps) regulates discharge of dredged or fill materials in waters of the U.S. (including wetlands) and construction of structures or work in navigable waters of the United States. The regulatory boundary for Seattle District is the state of Washington, except for Washington Ports on the Columbia River downstream of McNary Dam. These Ports are regulated by the U.S. Army Corps of Engineers, Portland District, Regulatory Branch (Portland District).

In May 1999, fish species listed or proposed for listing as threatened or endangered in the state of Washington under the Endangered Species Act of 1973 (ESA), as amended increased to a total of 18 species. With the additional listings, 90-95 percent of the applications reviewed by the Corps in Seattle District required some level of ESA consultation. With the additional workload placed on both the Corps and National Marine Fisheries Service (NMFS), improving consultation procedures became essential.

In March 2001, NMFS issued a biological opinion for the a programmatic consultation for these categories of activities in the State of Oregon, submitted by the U.S. Army Corps of Engineers, Portland District, Regulatory Branch. In an effort to provide more consistent and efficient review of permit actions and thereby providing more effective protection of listed or proposed species, Portland District and Seattle District have initiated discussions with NMFS to apply the Portland District Programmatic Consultation to all activities within Corps Jurisdiction proposed in the mainstem of the Columbia River downstream of McNary Dam in Washington State.

II. Intent of Use

This programmatic consultation is intended for those activities requiring a Department of the Army permit that occur in the mainstem Columbia River, downstream of McNary Dam and meet the descriptions and conservation measures outlined in Section III of this document. At a later date, the Corps may initiate a programmatic consultation with both NMFS and U.S. Fish and Wildlife for approval of these categories of activities within all of Washington stat and for all listed and proposed species.

The Corps seeks to obtain approval of for programmatic Section 7 consultation process through a programmatic biological opinion from NMFS. If an activity does not meet the description or parameters approved within the final programmatic consultation, the activity will go through individual consultation as outlined in Section 7 of the ESA.

A. Corps Regulatory Program

Statutory Authorities

The Corps regulates activities in waters of the U.S. through, Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act¹ of 1972, and Section 103 of Marine Protection, Research and Sanctuaries Act of 1972. The activities discussed within are regulated under Section 10 of Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act.

Under Section 10 of the Rivers and Harbors Act of 1899, a Department of the Army permit is required for any structures or work in navigable waters of the United States. Conclusive determinations of navigability can be made only by the United States Congress and/or by the federal courts.² For Washington state, a list of navigable waters of the United States and their extents are available on the Corps website – www.nws.usace.army.mil/reg/req.htm. Under Section 10, the Corps regulates all activities waterward of the ordinary high water (OHW) in non-tidal waters and waterward of mean high water (MHW) in tidal waters.

Section 404 of the Clean Water Act requires a Department of the Army permit for the discharge of dredged or fill materials into all waters of the U.S., including special aquatic sites such as wetlands, mudflats, and vegetated shallows. Under Section 404, the Corps regulates all fill or discharge activities waterward of the OHW in non-tidal wetlands and waterward of mean higher high water (MHHW) to the limit of the United States territorial seas³ in tidal waters. If wetlands or special aquatic sites occur adjacent to the open water, the Corps jurisdiction extends to the landward limits of the wetlands or special aquatic site. For wetlands that are tributaries to waters of the U.S., the Corps jurisdiction follows the boundaries of the wetlands.⁴ There are six different discharges that do not require a Section 404 permit. These activities are defined in 33 CFR 323.4. These exemptions only apply to Section 404 jurisdiction. There are no exemptions for Section 10 of the Rivers and Harbors Act or Section 103 of the Marine Protection, Research and Sanctuaries Act.

¹Also known as the Federal Water Pollution Control Act of 1948, as amended.

² 33 CFR 329.14(a)

³United States territorial seas extend waterward 3 nautical miles.

⁴ Wetland boundaries are delineated as per the “Corps of Engineers Wetland Delineation Manual” January 1987.

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 requires a Department of the Army permit for the transportation of dredged material to be disposed of in the ocean waters. "Ocean waters" are defined as those waters of the open seas lying seaward of the base line from which the territorial sea is measured.⁵

ESA Consultation Requirements

In accordance with Section 7(a)(2) of the ESA, all federal agencies are required, in consultation with USFWS and/or NMFS, to insure that any action authorized, funded or carried out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.⁶ For the Corps' Regulatory Branch, the "action" is the Department of the Army permit authorization.

In addition, Section 7(a)(1) of the ESA directs all federal agencies to utilize their authorities in furtherance of the purposes of ESA by carrying out programs for the conservation and recovery of species listed pursuant to ESA.⁷ The Corps, in an effort to further the conservation and recovery of listed species, proposes this programmatic consultation for these activities. The conservation measures for these activities allow for the construction of more fish-friendly activities. Approval of the programmatic consultation will provide an incentive of a simplified application review process for those activities that meet these conditions.

Other Programmatic Consultations

Seattle District has two other approved Programmatic Consultations with NMFS for activities in Washington State, including the Lower Columbia River. The activities are listed below with the date of NMFS approval in parentheses.

- ◆ Aids to Navigation (November 9, 2000)
- ◆ Mooring Buoys (November 9, 2000)
- ◆ Temporary Recreational Structures (November 9, 2000)
- ◆ Replacement of up to Eighteen (18) Existing Piling (November 9, 2000)
- ◆ Installation or Replacement of One (1) Boatlift (November 9, 2000)
- ◆ Scientific Measuring Devices (November 9, 2000)
- ◆ Oil Spill Containment (November 9, 2000)
- ◆ Fish and Wildlife Harvesting (November 9, 2000)
- ◆ Tideland Markers (November 9, 2000)

⁵ 33 CFR 324.2(a)

⁶ 50 CFR 402.

⁷ Section 7(a)(1) and see also 50 CFR 402.01(a).

- ◆ Nearshore Fill for State HAP Mitigation Requirements (November 9, 2000)
- ◆ Minor Bank Stabilization Repair Activities (November 9, 2000)
- ◆ Removal of Fish Passage Barriers (October 29, 2001)
 - Stream Crossings by Roads, Levees, Dikes or Similar Features
 - Tide Gates
 - Certain Types of Debris Jams
 - Certain Types of Sediment Bars or Terraces

The Corps and NMFS determined that the activities authorized on November 9, 2000 may affect, but were not likely to adversely affect the listed or proposed species. NMFS issued a biological opinion of “no jeopardy” for the activities authorized on October 29, 2001.

For those activities that are covered in the November 9, 2000 programmatic consultation and also proposed under this programmatic consultation, if NMFS approves this consultation, the conditions herein will apply to those duplicate activities.

For those activities that are covered in the October 29, 2001 programmatic consultation and also proposed under this programmatic consultation, the conditions of the October 29, 2001 programmatic consultation will remain in effect even if NMFS approves this consultation.

B. Summary of Types of Activities Addressed

In compliance with conservation measures associated with each activity as outlined in Section III below, this programmatic consultation addresses the activities described in Table 1: Categories of Activities in the Lower Columbia River.

Table 1: Categories of Activities in the Lower Columbia River

All activities covered by this programmatic consultation must comply with the general construction conservation measures along with the conservation measures associated with each individual category (See Section III). Each category of activities may be used in conjunction with any of the other categories listed.

- ◆ Streambank Protection Activities
- ◆ Water Control Activities (e.g. Levees and Dikes)
- ◆ Utility Lines – New and Replacement
- ◆ Road Construction – New, Repairs and Improvements
- ◆ Associated Upland Site Preparation for Buildings and Related Features

- ◆ Piers, Boat Ramps and Related Features
- ◆ Minor Discharges into Waters of the U.S. or wetlands
- ◆ Marinas - Maintenance of Existing Structures
- ◆ Installation of Small Temporary Floats
- ◆ Installation of Aids to Navigation and Mooring Buoys
- ◆ Installation of Structures in Fleeting and Anchorage Areas
- ◆ Maintenance Dredging
- ◆ Return Water from Upland Dredge Disposal Areas
- ◆ Fish and Wildlife Harvesting Attraction Devices and Activities

III. Activity Descriptions and Conservation Measures⁸

The activity descriptions and conservation measures are defined in this section. All activities covered under this programmatic consultation that require will need to meet all the applicable the conservation measures outlined under “General Construction”. In addition, where noted, all activities will comply with the conservation measures defined under “monitoring”. All references to the “applicant” refers to Department of the army permit applicant wishing to have an activity approved with the programmatic consultation. Any activity unable to meet the conservation measures defined herein or any terms and conditions that may be issued by NMFS, will be required to comply with ESA through individual Section 7 ESA consultation processed.

Activities covered herein may be used in conjunction with each other. For example, a construction of a road with an associated utility line may be authorized by combining those two activity conditions. The typical Department of the Army permit authorization for those activities is noted in parentheses next to the specific activity description. NWP = Nationwide Permit, LOP = Letter of Permission, RGP = Regional General Permit and IP = Individual Permit.

Determination of Effect

The effects of these activities on listed salmonid species in the Lower Columbia River were analyzed in both the “Programmatic Biological Assessment for Categories of Activities Requiring Department of the Army Permits” prepared by the U.S. Army Corps of Engineers, Portland District, Regulatory Branch, dated March 2000 and “Programmatic Biological Opinion for 15 Categories of Activities Requiring Department of the Army Permits” prepared by National Marine Fisheries Service, Northwest Region, dated March 21, 2001. These documents

⁸ Activity Descriptions are from both the Portland District Programmatic Biological Assessment (March 2000) and the NMFS Programmatic Biological Opinion (March 2001) for these categories of activities.

have been included in the Appendices for reference. Seattle District refers to these effects analyses as the analysis for this programmatic consultation.

Based on these effects analysis, we determine that the proposed activities including their conservation measures “may affect, likely to adversely affect” listed salmonids and their designated critical habitat.

The steller sea lion may occur in the Lower Columbia River. Occurrence is rare and only up to the mouth of the Cowlitz River. With the conservation measures described below, we determine that the proposed activities “may affect, not likely to adversely affect” the sea lion.

A. General Construction: All activities that require temporary access roads, use of heavy equipment, earthwork, creation of new impervious surface⁹, site restoration, or that may otherwise involve in-water work or affect fish passage, must meet all applicable general construction conservation measures.

1. Timing of in-water work. All work within the active channel of the Lower Columbia River must occur from **November 1 to February 28** of any year. No work may occur from 1 March to 31 October of any year.

Note: Based on project specific issues, timing windows may be modified with written approval from NMFS per the coordination procedures outlined in this programmatic consultation under Section VII – Implementation Procedures.

2. Isolation of in-water work area. If listed fish may be present, including incubating eggs or juveniles, the applicant will ensure that work area is well isolated from the active flowing stream within a cofferdam (made out of sandbags, sheet pilings, inflatable bags, etc.), or similar structure, to minimize the potential for sediment release. Further, no ground or substrate disturbing action may occur within the active channel 300-feet upstream of potential spawning habitats without isolation of the work area from flowing waters.

- a. Fish screen. Any water intake structure, including pumping to isolate an in-water work area, must have a fish screen installed, operated and maintained according to NMFS' fish screen criteria.¹⁰

⁹ "Impervious surface" means a hard surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions before development, e.g., roof tops, walkways, parking lots, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces that similarly impede the natural infiltration of stormwater.

¹⁰ National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996)(guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (<http://www.nwr.noaa.gov/1hydro/hydroweb/ferc.htm>).

b. The applicant must pump discharge water from the isolated area to an upland area where it can flow overland before returning to the creek in a way that does not cause erosion and will meet Washington state water quality standards before reaching the receiving water.

c. Discharge into potential fish spawning areas or areas with submerged vegetation is **prohibited**.

d. Seine and release. Before and intermittently during pumping to isolate an in-water work area, the applicant must attempt to seine and release fish from the isolated area as is prudent to minimize risk of injury.

(1) A fishery biologist experienced with work area isolation and possessing the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire seining operation.

(2) The seining team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures. Complete transfers using a sanctuary net that holds water during transfer to prevent the added stress of an out-of-water transfer.

(3) Release seined fish as near as possible to capture sites.

(4) Transfer of ESA-listed fish from the applicant to third-parties other than NMFS personnel requires **written approval from the NMFS per the coordination procedures outlined in this programmatic consultation under Section VII – Implementation Procedures**.

(5) The applicant must obtain any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities.

(6) The applicant must allow the Corps and NMFS or their designated representative to accompany field personnel during the seining activity, and allow such representative to inspect the applicant's seining records and facilities.

3. Fish passage. Work must not inhibit passage of any adult or juvenile salmonid species throughout the construction period or after project completion. All culvert and road designs must comply with Washington State Department of Fish and Wildlife (WDFW) guidelines and criteria for stream-road crossings, as appropriate for the project area. Channel modifications that could adversely affect fish passage, such as by increasing water velocities are **not covered** under this programmatic consultation.

4. Pollution and Erosion Control Plan. The applicant must develop a Pollution and Erosion Control Plan for each authorized project to prevent point-source pollution related to construction operations. The Pollution and Erosion Control Plan will contain the pertinent elements listed below and meet requirements of all applicable laws and regulations:

a. Methods the applicant will use to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

b. Methods the applicant will use to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.

c. A description of any hazardous products or materials the applicant will use for the project, including procedures for inventory, storage, handling, and monitoring.

d. 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 the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

e. Methods the applicant will use to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

5. Temporary access roads. The applicant must design temporary access roads as follows:

a. The applicant must use existing roadways or travel paths whenever possible.

b. Where stream crossings are essential, a survey must determine and map any potential spawning habitat within 1,000-feet upstream and downstream.

c. **No** stream crossings may occur at known or suspected spawning areas or within 300-feet upstream of such areas where impacts to spawning areas may occur.

d. Where stream crossings are essential, the crossing design must provide for foreseeable risks (e.g., flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if

the crossing fails.

e. Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.

f. Temporary roads within 150-feet of streams must avoid and minimize soil disturbance and compaction by clearing vegetation to ground level and placing clean gravel over geotextile fabric.

g. The applicant must minimize the number of stream crossings.

h. The applicant may not construct a mid-slope road or a road on a steeper slope than 30-percent for projects to remove debris jams or sediment terraces.

6. Treated wood removal. Activities that require removal of treated wood must use the following precautions.

a. The applicant must take care to ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, the applicant must remove it immediately.

b. All treated wood debris and pilings removed during a project must be disposed of at an approved disposal facility for treated wood.

c. If the applicant removes treated wood pilings, the following conditions apply:

(1) The applicant must dislodge pilings with a vibratory hammer.

(2) Once loose, the pilings must be placed onto the construction barge or other appropriate dry storage location, and not left in the water or piled onto the stream bank.

(3) If pilings break during removal, the applicant must remove the stump by breaking or cutting 3-feet below the sediment surface and covered with a substrate appropriate for the site.

(4) Long-term disposal of the piles must be at an approved disposal area for hazardous materials of this classification.

7. Cessation of work. All project operations, except efforts to minimize storm or high flow erosion, must cease under high flow conditions that may result in inundation of the project area.

8. Pre-construction activities. Before significant alteration of the project area, the applicant must complete the following actions.

- a. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
- b. The following emergency erosion control materials are onsite.

(1) A supply of erosion control materials (e.g., silt fence and straw bales) is on hand to respond to sediment emergencies. The applicant must use certified weed-free straw or hay bales when available to prevent introduction of noxious weeds.

(2) An oil absorbing, floating boom is available on-site during all phases of construction whenever surface water is present.

- c. All temporary erosion controls (e.g., straw bales, silt fences) are in-place and appropriately installed downslope of project activities within the riparian area. The applicant must install and maintain effective erosion control measures at all times during the project, until permanent erosion control measures are effective.

9. Heavy Equipment. The applicant must restrict heavy equipment use as follows.

- a. When heavy equipment is required, the applicant must use equipment having the least impact (e.g., minimally sized, rubber tired).

- b. The applicant must fuel, maintain and store heavy equipment as follows.

(1) All equipment used instream must be cleaned before beginning operations below the bankfull elevation. The applicant must remove external oil and grease, along with dirt and mud, treat all wash and rinse water to meet state water quality standards before reaching the receiving water.

(2) Place vehicle staging, cleaning, maintenance, refueling, and fuel storage areas will be placed **a minimum of 150-feet** horizontal distance from any stream.

(3) All vehicles operated **within 150-feet** of any stream or water body must be inspected daily for fluid leaks before leaving the vehicle staging area. The applicant must repair any leaks detected in the vehicle staging area before the vehicle resumes operation.

(4) When not in use, they must store vehicles in the vehicle staging area.

(5) The applicant must diaper stationary power equipment, such as cranes and generators, operated **within 150-feet** of any stream to prevent leaks.

10. Site preparation. Site preparation is completed in the following manner, including removal of stream materials, topsoil, surface vegetation and major root systems.

(a) The applicant must leave any instream large wood or riparian vegetation moved or altered during construction on the site, in the original arrangement, or replace it with a functional equivalent.

(b) When revegetation or restoration is required, the applicant must stockpile weed-free topsoil and native vegetation removed from the site for redistribution on the site.

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

(a) The applicant must complete projects as quickly as possible and stabilize all disturbed areas within 12-hours of any break in work using surface erosion and sediment controls (e.g., water management, soil bioengineering, revegetation, effectiveness evaluation). "Break in work" is defined as greater than **7 days** in the dry season (June 1 through September 30 of any year) or greater than **2 days** in the rainy season (October 1 through May 31 of any year).

(b) The applicant must inspect all erosion control devices **daily** during the rainy season (October 1 through May 31 of any year) and **weekly** during the dry season (June 1 through September 30 of any year) during construction to ensure erosion control devices are working adequately.

(1) If inspection shows that the erosion controls are ineffective, the applicant must mobilize work crews immediately, during working and off-hours, to make repairs, install replacements, or install additional controls as necessary.

(2) The applicant must deem erosion control measures ineffective when turbidity plumes are evident during any part of the year.

(3) The applicant must remove sediment from sediment controls once it has reached 1/3 of the exposed height of the control.

(4) The applicant must filter sediment-laden water created by construction activity before it leaves the right-of-way or enters a stream or other water body. Silt fences or other detention methods must be installed as close as reasonable to culvert outlets to reduce the sediment entering aquatic systems and ensure that runoff must meet state water quality standards before reaching the receiving water.

(c) The applicant must obtain boulders, rock, woody materials and other natural construction materials used for the project from outside the riparian area.

12. Site restoration. The applicant must clean up and restore all streambanks, soils and vegetation disturbed by the project as follows.

(a) The applicant must restore all damaged streambanks to a natural slope, pattern and profile suitable for establishment of permanent native woody vegetation.

(b) The applicant must plant disturbed areas by the first spring season following completion of construction (**before April 15**) with a diverse assemblage of herbaceous, shrub and tree species native to the project area or region.

(c) **No** herbicide application is allowed. Mechanical removal of undesired vegetation and root nodes is permitted.

(d) **No** surface application of fertilizer will be used **within 50 feet** of any stream channel.

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

B. Streambank Protection Activities: Streambank protection activities include the placement of fill material waterward of the line of ordinary high water (OHW) or in wetlands for the purpose of preventing bank erosion, scour, or other type of failure must meet all applicable terms and conditions to implement these streambank protection terms and conditions. (NWP 13 and IP)

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Installation of structures built entirely or primarily of rock, concrete, steel or similar materials intended to prevent bank failure at design flows above

bankfull elevation¹¹, such as revetments¹², bulkheads¹³, groins¹⁴, and buried groins.

- ◆ Actions other than barbs¹⁵ that remove or alter channel complexity, relocate channels, construct overflow channels, or otherwise adjust stream profile, elevation, channel pattern, cross-sectional dimensions, or channel location.
- ◆ Installation of weirs or other channel spanning structures.

Conservation Measures:

1. Streambank protection activities will have the conservation goal of providing the greatest degree of natural habitat function that is economically achievable through the application of an ecological approach to bank protection and the best available bioengineering¹⁶ practices, technologies, processes, siting criteria, operating methods, or other alternatives.
2. The applicant will design the streambank protection activity based on options identified using the three matrices based on mechanism of failure, reach conditions, and habitat impacts described in the Aquatic Habitat Guidelines for Integrated Streambank Protection (WDFW et al. 2000)¹⁷. The applicant will

¹¹ "Bankfull elevation" means the bank height inundated by a 2-year average recurrence interval and may be estimated by morphological features such as average bank height, scour lines and vegetation limits. "Channel migration zone" means the area defined by the lateral extent of likely movement along a stream reach where there is evidence of active stream channel movement over the past 100 years, e.g., alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams.

¹² "Revetment" means a facing of stone, concrete, etc., built to protect a scarp, embankment, or shore structure against erosion by wave action or currents.

¹³ "Bulkhead" means a structure or partition to retain or prevent sliding of the land or to protect the upland against damage by wave action or currents.

¹⁴ "Groin" means a high elevation projection from a bank, usually perpendicular to the bank and sometimes buried in the bank where it will be exposed by subsequent erosion, to trap sediment and control streambank erosion.

¹⁵ "Barb" means a low elevation projection from a bank, angled upstream to redirect flow away from the bank and control flow alignment and streambank erosion.

¹⁶ "Bioengineering" means the use of live and dead plant materials to stabilize hill slopes, streambanks or shorelines. Examples include facines, bundles, logs, root wads that are often used with soil or other hard structures such as rocks, boulders or wood crib structures.

¹⁷ WDFW (Washington Department of Fish and Wildlife), Washington Department of Transportation, and Washington Department of Ecology, *Integrated Streambank Protection Guidelines*, various pagination (Draft)(October 30, 2000)(guidance on ecological approach to management of eroding streambanks) (<http://www.wa.gov/wdfw/hab/ahg/ispdoc.htm>). Chapter

submit the completed matrices to the Corps prior to construction as documentation of meeting the ISPG methods.

3. Bioengineering Practices. The applicant must incorporate the following specific bioengineering practices into each streambank protection activity in order to meet this programmatic consultation:

(a) **Avoid or minimize the use of rock, stone and similar materials**. The applicant will only use rock, stone and similar materials as necessary for the following purposes, provided that the minimum amount of rock necessary for the purpose is used and the resulting structure does not impair natural stream flows into or out of secondary channels or riparian wetlands.

(1) To construct a footing, facing, headwall, or other shelter necessary to prevent scouring or downcutting of an existing flow control structure (e.g., culvert, intake, outfall, spillway), utility line, or bridge support.

(2) To fill scour holes, if the rock is limited to the depth of the scour hole and does not extend above the channel bed.

(3) As ballast to anchor or stabilize large woody debris components of structural or biotechnical bank protection projects.

(4) To construct a rock toe that integrates large woody debris for use with structural and biotechnical erosion treatments, if the length of the toe is **less than 150-feet** or **2.5 bankfull channel widths**, whichever is less.

(5) To construct a barb or similar bank projection to modify secondary flow patterns and bed topography, unless otherwise **approved in writing by NMFS per the coordination procedures outlined in this programmatic consultation under Section VII – Implementation Procedures**.

(b) **Barb design**. The applicant must designed barbs as follows to be covered under this programmatic consultation:

(1) **No** part of the barb structure may exceed bank full elevation, including all rock buried in the bank key. The applicant must fill the trench excavated for the bank key above bankfull elevation with soil and top the trench with native vegetation.

(2) Maximum barb length must not exceed **1/4 of the bankfull channel width**.

5, pages 5-4 through 5-7 describe the process of selecting bank protection methods using the screening matrices; pages 5-7 through 5-19 provide additional information to support the choice of techniques.

(3) If two or more barbs are built in a series, the barb farthest upstream must be placed **within 150-feet or 2.5 bankfull channel widths**, whichever is less, from the barb farthest downstream.

(4) Rock must be individually placed without end dumping.

(5) Native woody riparian planting must be included as a project component.

(c) Class 350 metric or larger rock is preferred unless it will constrict the channel migration zone.

(d) Wood placed as a component of streambank protection projects must be large, intact, hard, and undecayed to partly decaying with untrimmed root wads to provide functional refugia habitat for fish. Fragmented wood that is decayed and laying on the ground or partially sunken in the ground is not acceptable.

C. Water Control Activities (e.g. Levees and Dikes): Water control activities include placement of fill or structures waterward of the line of ordinary high water (OHW) or in wetlands for the purpose of preventing or reducing the risk of flooding, or to maintain drainage. Water control activities include, but are not limited to, dikes, levees, tide gates, pump stations and related structures. (NWP 18, 31, 37, 41 and IP)

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Impair connectivity between off-channel areas, wetlands, and the main channel;
- ◆ Authorize installation of any new water control structure, except to maintain or improve fish passage.

Conservation Measures:

1. Receiving water quality and quantity. The applicant must manage any discharge from a water control facility to ensure that it will meet Washington state water quality standards before reaching a receiving water.

2. Tide gates. For all activities proposed to maintain or improve tide gates, the applicant must allow fish passage through 90 percent of the tide cycle or 90 percent of river stage in non-tidal areas, and provide adequate salinity to those

areas that fish will have access to, unless otherwise ***approved in writing by NMFS per the coordination procedures outlined in this programmatic consultation under Section VII – Implementation Procedures.***

D. Utility Lines – New and Replacement: Utility lines include any pipe or pipeline placed waterward of the line of ordinary high water (OHW) or in wetlands¹⁸ for the purpose of transporting sewer, gas, water, electrical energy, cable, telephone, or other utility services. (NWP 12, LOP and IP)

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Construction of any new permanent roads within the riparian zone;
- ◆ Use of open trench excavation in running water;
- ◆ Placement of a utility line in any of the following areas:
 - Areas with evidence of vertical or lateral instability, landslides, slumping, or active fissures or faults are avoided.
 - Above the bed of estuarine or marine waters at depths shallower than - **10.0 feet** of mean lower low water (MLLW)

Conservation Measures:

1. Utility line stream crossing design. The applicant must design utility line stream crossings as follows.

- (a) Alignments must be perpendicular to the watercourse, or nearly so.
- (b) The applicant must protect utility lines against exposure due to lateral migration, head cutting, general scour, or debris loading associated with the 100-year flood flow to reduce the need for future maintenance.

¹⁸ Based on the waterbody, construction techniques for the placement of the utility line may or may not be regulated by the Corps. Placement of utility line in a navigable water, regardless of construction techniques, is regulated under Section 10 of the Rivers and Harbors Act. For waters regulated only under Section 404 of the Clean Water Act (including wetlands), only trenching is regulated. Directional drilling if initiated and completed in upland areas, is not regulated under Section 404 of the Clean Water Act.

(c) Stream crossing designs must be used in the following priority.

(1) Aerial lines, including conduit lines hung from existing bridges in a manner that prevents damage by flooding events;

(2) Directional drilling, boring and jacking; or

(3) Dry trenching or plowing – authorized for dry streams with no water present.

2. Directional drilling. If directional drilling, boring or jacking methods are used for utility line projects, the following will apply.

(a) The drill, bore or jack hole must span the channel migration zone and any associated or adjacent wetlands.

(b) Bore and jack pits, or directional drill recovery/recycling pits, and any associated waste or spoils, must be completely isolated from surface waters.

(c) If a drill, bore or jack hole cracks or collapses to the extent that drilling fluid or sediment is visible within the water or streambed, all drilling activity must cease and biologists from NMFS and the Washington Department of Wildlife (WDFW), as appropriate for the project area, must be consulted regarding the extent of the risk to fish life. Directional boring may only resume **after written approval by NMFS**.

(d) The applicant must recover all drilling fluids not recycled and dispose of the fluids outside of the floodplain to prevent re-entry into the water.

(e) The applicant must place bore and jack pits, directional drill recovery/recycling pits, or other excavations associated with conduit installation in an appropriate location to prevent damage to the streambed and banks, and to prevent wastewater or spoil material from entering the water.

3. Trenching. If trenching or plowing methods are used for utility line projects, the following will apply.

(a) Trenching and plowing must occur in the dry.

(b) For work waterward of the line of ordinary high water (OHW), the applicant must backfill trenches with native material and cap trenches with clean, rounded, uniformly-graded gravel with a size, composition and depth suitable for fish use in the project area or **as approved in writing by NMFS per the coordination procedures outlined in this programmatic consultation under Section VII – Implementation Procedures**.

(c) The applicant must replace all large wood displaced during trenching or plowing in its original location and configuration.

E. Road Construction – New, Repairs and Improvements: Road construction activities include the construction of new roads, the repair and/or improvement of existing roads where a navigable water is crossed or fill is placed waterward of ordinary high water (OHW) or in wetlands. (NWP 14, LOP, and IP)

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Construction of a new, permanent road not intended for use as a bridge approach **within 150-feet** of a stream or waterbody (including wetlands)¹⁹ that is occupied by listed salmonids during any part of the year or designated as critical habitat;
- ◆ Construction of a new, permanent road not intended for use as a bridge approach **within 50-feet** of a stream or waterbody (including wetlands) that is not occupied by listed salmonids and not designated as critical habitat, but discharges into a stream that is either occupied or designated;
- ◆ Construction of a new bridge pier or abutment below the bankfull elevation, or within the Federal Emergency Management Agency (FEMA) designated floodway if embankment fill for the bridge approach would impair floodplain function;
- ◆ Use of a weir or culvert with interior baffles to provide fish passage at a road crossing.

Conservation Measures:

1. Fill width. Fill width must be limited as follows:

- (a) Fill width must be limited to the minimum necessary to complete the crossing;
- (b) Width of roadway prism must not increase by more than **20 percent** of the existing roadway surface width;

¹⁹ All distances from a stream or water body are measured horizontally from the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater.

(c) The applicant must minimize any increase in road stream crossing width according to General Construction conservation measures, and.

(d) Existing stream width must not be reduced.

2. Scour holes. Scour holes at the base of bridge piers or abutments may be repaired by placing no more fill than is necessary to reach the level of the stream bed.

3. Fish passage at road crossings. Fish passage at road crossings must be constructed, maintained, repaired or improved as follows:

(a) **Design**. Fish passage at road crossings must be provided in the following priority to ensure the least possible delay to fish passage:

(1) Full-spanning bridge;

(2) Open arch;

(3) Embedded culvert with streambed simulation; or

(4) No-slope design culvert.²⁰

(b) All fish passage design at road culverts must comply with WDFW guidelines and criteria²¹, including appropriate grade controls to prevent culvert failure due to changes in stream elevation in the project area, until NMFS approved criteria are available.

(c) The applicant must design all crossings to span alluvial fans, if any, and otherwise accommodate sediment transport and deposition so as not to impede the formation of alluvial fans and sediment deposition zones.

(d) The applicant must clean culverts by working from the top of the bank to remove only the minimum amount of wood, sediment and other natural debris necessary to maintain culvert function without disturbing spawning gravels.

²⁰ "No-slope design culvert" means a culvert that is sufficiently large and installed flat to allow the natural movement of bedload to form a stable bed inside the culvert. See, WDFW (Washington Department of Fish and Wildlife), Fish Passage Design at Road Culverts: A Design Manual for Fish Passage at Road Crossings (March 3, 1999)(providing guidance on design options, considerations, rules and regulations) (<http://www.wa.gov/wdfw/hab/ahg/culverts.htm>).

²¹ WDFW (Washington Department of Fish and Wildlife), Fish Passage Design at Road Culverts: A Design Manual for Fish Passage at Road Crossings (March 3, 1999)(providing guidance on design options, considerations, rules and regulations) (<http://www.wa.gov/wdfw/hab/ahg/culverts.htm>).

(e) The applicant must place any large wood recovered during cleaning downstream of the crossing.

(f) The applicant must conduct all instream work in the dry, isolating the work area if necessary.

F. Associated Upland Site Preparation for Buildings and Related Features:

Associated upland site preparation for buildings and related features include those activities that are proposed in conjunction with other activities in this programmatic consultation that require upland excavation, filling and grading for the purpose of preparing a site for construction of any type of building, as well as fills for driveways, parking areas, garages, storage and utility buildings, etc. These activities occur outside Corps jurisdiction but are included as part of the overall “action area”²² of the activity proposed within Corps jurisdiction.

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Site preparation **within 150-feet** of a stream or waterbody (including wetlands) that is occupied by listed salmonids during any part of the year or designated as critical habitat; or
- ◆ Site preparation **within 50-feet** of a stream or waterbody (including wetlands) that is not occupied by listed salmonids and not designated as critical habitat, but discharges into a stream that is either occupied or designated.

Conservation Measures:

1. The applicant will implement all applicable General Construction conservation measures.

G. Piers, Boat Ramps and Related Features: Piers, boat ramps, and related features includes placement of a structure waterward of ordinary high water (OHW) in navigable waters and/or placement of fill material waterward of OHW or in wetlands for the purpose of providing boat moorage or appurtenant features related to the boat moorage facility (e.g. parking, boat houses, etc.). (NWP 18, LOP, IP)

²² “Action area is defined by the consultation regulations as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” [50 CFR 402.02]

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Placement of a new boat dock, marina, boat ramp, or related facilities in:
 - An estuary where submerged vegetation will be displaced, as determined by a pre-construction survey;
 - An area that is likely to require routine maintenance dredging, such as backwater sloughs, silted-in lateral channels, alcoves, side channels and other shallow-water areas; or
 - Within **0.5 mile** downstream of a tributary stream mouth.
- ◆ Floating structures wider than **6-feet** unless:
 - Current velocity is more than **0.6 feet per second** during the low flow period from April 1 through August 31;
 - The structure is more than **50-feet** from the shoreline; and
 - In water is more than **20-feet deep**.
- ◆ Use of treated wood or piles for any structure that may come into contact with water.
- ◆ Excavation of a backwater slough, silted-in lateral channel, alcove, side channel or other shallow-water areas area for boat dock, marina or boat ramp construction.
- ◆ Placement of fill to create a breakwater, jetty, or groin;
- ◆ Any design that is likely to create a deposition zone that will create the need for routine maintenance dredging.
- ◆ Use of asphalt for ramp construction.

Conservation Measures:

1. Piscivorous bird deterrence. All pilings and navigational aids, such as moorings, and channel markers, must be fitted with devices to prevent perching by piscivorous bird species.
2. Non-water dependent facilities. All parking lots, picnic areas, toilets, trails

and other non-water dependent facilities must be constructed as follows.

(a) **150-feet or more** from any stream or water body (including wetlands) occupied by listed salmonids during any part of the year.

(b) **50-feet or more** from any stream or water body (including wetlands) that is not occupied by listed salmonids or designated as critical habitat, but discharges into a stream that is occupied or designated.

3. Access walkways, docks and related features. Projects involving access walkways, docks and related features must be maintained, repaired, or moved as follows:

(a) The applicant must minimize the number of pilings to the full extent practicable.

(b) The applicant must limit all piers, ramps, floats, and related features to a maximum of **6-feet** in width unless:

(1) Current velocity is more than **0.6 feet per second** during the low flow period from April 1 through August 31;

(2) The structure is more than **50-feet** from the shoreline; and

(3) In water is more than **20-feet** deep.

(c) The applicant must place all floats in deep enough water to prevent grounding and ensure **one (1) foot** of water is maintained between the river bed and the bottom of any float.

(d) The applicant must encapsulate all flotations to permanently prevent the breakup and loss of flotation.

(e) The applicant must place mooring buoys in water deep enough so that moored boats never ground out or prop wash the bottom.

H. Minor Discharges into Waters of the U.S. or wetlands: Minor discharges into waters of the U.S. or wetlands include discharges of excavation or fill associated with such activities as, but not limited to, small structural fills, minor excavations or dredging such as culvert maintenance, installation of outfall structures or minor repairs of previously authorized structures or fill. (NWP 3, NWP 7, or NWP 18)

Activities not covered: Activities that do not meet the conservation measures listed below will require individual ESA Section 7 consultation.

Conservation Measures:

1. Fish screen. The applicant must operate and maintain any water intake covered under this activity using a fish screen installed, operated and maintained in accordance to NMFS' fish screen criteria.²³

2. Supporting analysis: The applicant must provide the following written assessment to the Corps prior to construction to confirm the activity meets the programmatic consultation:

(a) Environmentally acceptable alternatives for management of the excavated material.²⁴

(b) The applicant must manage the discharge water from any upland facility used to store excavated spoils to ensure that:

(1) The discharge is detained or treated to meet Washington state water quality standards before reaching a receiving water, and must not alter streamflow in a way that impairs spawning, rearing, migration, feeding or other essential behavioral patterns; and,

(2) **No** outfall or diffuser port will discharge water at a rate exceeding 4-feet per second.

2. Culvert maintenance. The applicant must clean culverts by working from the top of the bank to remove only the minimum amount of wood, sediment and other natural debris necessary to maintain culvert function without disturbing spawning gravels.

(a) The applicant will place any large wood recovered during cleaning downstream of the culvert.

(b) The applicant will conduct all work in the dry, isolating the work area if necessary.

I. Installation and Repair of Aids to Navigation and Mooring Buoys:

Installation and repair of aids to navigation and mooring buoys include the placement of permanent and temporary navigational aids such as mooring buoys

²³ National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) <http://www.nwr.noaa.gov/1hydroweb/ferc.htm>.

²⁴ U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Oregon Department of Environmental Quality, Washington Department of Ecology, and Washington Department of Natural Resources, *Dredged Material Evaluation Framework: Lower Columbia River Management Area* (November 1998)(providing a consistent set of procedures to determine sediment quality for dredging activities) <http://www.nwp.usace.army.mil/ec/h/hr/Final/>

and channel markers as well as mooring buoys used for single boat moorage. (NWP 1, NWP 10, and LOPs)

Activities not covered: Activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

Conservation Measures:

1. Piscivorus bird deterrence. The applicant will fit all pilings and navigational aids, such as moorings, and channel markers, with devices to prevent perching by piscivorus bird species.

J. Marinas - Maintenance of Existing Structures: Maintenance of existing marina structures includes maintenance, repair, relocation of existing structures within an authorized marina. This activity allows for the increase in overwater structures as long as it complies with the width restrictions, the depth and shoreline distance restrictions and new piling does not exceed 5 single piling or one 3-5 pile dolphin. (NWP 28, LOP & IP)

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ The use of treated wood or piles; or
- ◆ New covered moorage wider than **6 feet** unless:
 - Current velocity is more than **0.6 feet per second** during the low flow period from April 1 through August 31;
 - The structure is more than **50-feet** from the shoreline; and
 - In water is more than **20-feet** deep.

Conservation Measures:

1. Replacement docks. All replacement piers meet criteria for pier construction under “Piers, Boat Ramps and Related Features”.
2. Access walkways, docks and related features. All activities authorized under this category that include access walkways, docks and related features must also meet all applicable terms and conditions for those structures listed under “Piers, Boat Ramps and Related Features.”
3. Relocating marina structures. Marina structures must be placed as follows:

(a) The applicant may only move structures within the existing footprint of the marina or into deeper water;

(b) The applicant may not move structures to water shallower than **20-feet** mean lower low water (MLLW); and

(c) Where water depth along the shoreline is deeper than **20-feet** MLLW, the applicant must place all structures at least **50-feet** away from the shoreline.

4. Piscivorous bird deterrence. The applicant must fit all pilings and navigational aids, such as moorings, and channel markers, with devices to prevent perching by piscivorous bird species.

5. Installation of new piling or dolphins. The applicant may place a maximum of up to five (5) single piles or one 3-5 pile dolphin.

6. Non-water dependent facilities. Whenever parking lots, picnic areas, toilets, trails and other related upland (non-water dependent) facilities are maintained or repaired, the applicant must relocate these facilities as follows whenever feasible.

(a) **150-feet** or more from any stream or water body (including wetlands) occupied by listed salmonids during any part of the year or designated as critical habitat;

(b) **50-feet** or more from any stream or water body (including wetlands) that is not occupied by listed salmonids and not designated as critical habitat, but discharges into a stream that is either occupied or designated.

K. Installation of Small Temporary Floats: Installation of small temporary floats include temporary buoys, markers, small floating docks, and similar structures placed for recreational use during specific events such as, but not limited to, water skiing competitions and boat races or seasonal use. (NWP 11 and LOPs)

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Installation of floats in areas with marine submerged vegetation;
- ◆ Floating storage units or boat houses;
- ◆ Deployment of a temporary float for longer than **21 days**; or

- ◆ Placement of floats closer than **50 feet** from shore or in waters less than **20 feet** deep at MLLW.

Conservation Measures

1. Float installation. The applicant must install all floats as follows:
 - (a) The applicant must entirely encapsulate all flotations to permanently prevent the breakup or loss of flotation material;
 - (b) The applicant may not install floats more than **7 days** in advance of the event;
 - (c) The applicant must remove all floats within **5 days** of the end of the event; and,
 - (d) Floats must not ground out at low water; at least one foot of depth must be maintained between the river bed and the bottom of any float.
2. Piscivorous bird deterrence. The applicant must fit any piling used to anchor floats with devices to prevent perching by piscivorous bird species.

L. Installation of Structures in Fleeting and Anchorage Areas. Structures in fleeting and anchorage areas include buoys, floats, and other devices placed within fleeting or anchorage areas to facilitate storage of vessels where such areas have been established for that purpose by the U.S. Coast Guard. (NWP 9 and LOP).

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Construction of new floating docks or similar structures;
- ◆ Placement of structures closer than **50 feet** from shore or in water less than **20 feet** deep at MLLW.

Conservation Measures:

1. Float installation. The applicant must install any buoy or similar device as follows:
 - (a) The applicant must entirely encapsulate all flotations to permanently prevent the breakup or loss of flotation material;

(b) The applicant may not install buoys and floats before it is necessary to actively use the fleeting or anchorage area;

(c) The applicant must remove all buoys and floats from any fleeting or anchorage area that is not actively used.

2. Piscivorous bird deterrence. The applicant must fit any piling used to anchor buoys, floats or other structures used in a fleeting or anchorage area with devices to prevent perching by piscivorous bird species.

M. Maintenance Dredging: Maintenance dredging includes any dredging of existing marinas, ports, industrial or commercial facilities to maintain access to the facility. (NWP 35, LOP and IP).

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ Dredging for the purpose of flood control or gravel extraction;
- ◆ Dredging that takes place beside, or upstream of, salmonid spawning habitat;
- ◆ Dredging that requires stream diversion;
- ◆ Dredging that takes place along the mainstem of the Columbia River, above Bonneville Dam, in waters less than **20-feet** deep at MLLW; or
- ◆ Dredging that uses the economic loading method for hopper dredging.²⁵

Conservation Measures:

1. Supporting analysis: Maintenance dredging. The applicant must submit to the Corps prior to construction a written documentation of compliance with most recent version of NMFS approved criteria for evaluation of contaminated sediments.²⁶

²⁵ "Economic loading" means pumping dredged material with a high water content into the containment area of a hopper dredge, and allowing highly turbid water to overflow over the holding area so that more consolidated material may be collected in the dredge containment area. This process results in a large turbidity plume from the dredge and is often preferred by the contractor performing the dredging because it saves time and money by increasing hopper dredge loads.

²⁶ See, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Oregon Department of Environmental Quality, Washington Department of Ecology, and Washington

2. Dredge operation. The applicant must operate dredges as follows.

(a) **Hydraulic**. The applicant must operate the dredge intake at or below the surface of the material being removed, but may be raised for brief periods of purging or flushing.

(b) **Clamshell**. Use finishing type bucket with flaps unless debris or hard sediment requires otherwise.

3. Placement of dredge spoils. All dredged spoil must be either disposed of at an approved ocean disposal site or permanently confined in an approved upland area where it cannot reenter the water body and must be large enough to allow settling.

4. Discharge water. Dredge spoil discharge water returning to the body of water from which it was dredged must be managed as follows.

(a) Discharge water must be detained or otherwise treated to meet all Washington state water quality standards, including turbidity, at the end of the pipe, and

(b) Discharge water must not exceed **4-feet per second** at either the outfall or diffuser port.

N. Return Water from Upland Dredge Disposal Areas: This activity includes return water from upland, contained dredge material disposal areas. The return water from a contained disposal area is administratively defined as a discharge of dredged material by 33 CFR 323.2(d) even though the disposal itself occurs on the upland and thus does not require a Section 404 Clean Water Act permit. (NWP 16)

Activities not covered: Activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

Conservation Measures:

(a) The applicant must manage all return water from upland disposal sites to ensure that the water meets Washington state water quality standards before reaching a receiving water and must not alter streamflow in a way that impairs spawning, rearing, migration, feeding or other essential behavioral patterns.

Department of Natural Resources, *Dredged Material Evaluation Framework: Lower Columbia River Management Area* (November 1998) (providing a consistent set of procedures to determine sediment quality for dredging activities) <http://www.nwp.usace.army.mil/ec/h/hr/Final/>

(b) Return water discharged from an outfall or diffuser port must not exceed **4-feet per second**.

O. Fish and Wildlife Harvest, Attraction Devices and Activities: This activity includes the installation and use of fish and wildlife harvesting devices and activities such as, but not limited to, crab pots and shrimp pots. (NWP 4)

Activities not covered: The following activities are not covered under this programmatic consultation. These activities and any covered activities not meeting the conservation measures listed below will require individual ESA Section 7 consultation.

- ◆ The following types of mariculture:
 - Non-native species;
 - Shellfish and prey species over eelgrass beds;
 - Benthic culture methods;
 - Kelp harvest; or

- ◆ The following types of habitat manipulation:
 - Enclosure or impoundment of any tidally influenced wetlands,
 - Significant alteration of areas of "high productivity" as determined by pre-operational sampling developed with input from state and Federal resource agencies, or
 - Direct application of carbaryl or other pesticides.

Conservation Measures:

1. Supporting analysis: Fish and wildlife activities. The applicant must submit a written assessment to the Corps prior to construction of the following considerations:

(a) The applicant must provide evidence that impacts to listed species have been avoided and minimized to the full extent practicable.

(b) Where cage mariculture operations are undertaken, the applicant must investigate water depths and circulation patterns and maintain the operation so that the buildup of waste products, excess feed, and chemical agents are precluded.

(c) Before construction of artificial reefs or other attraction devices, the applicant must evaluate the impact resulting from the change in habitat (sand bottom to rocky reef, etc.).

(1) The overall quantity of shellfish culture in the estuary will be considered in light of the estuarine food resources necessary for salmon.

(2) Any net pen structure must have small enough webbing to prevent entanglement of prey species.

(3) All facilities for shellfish culture must be geo-spatially referenced and mapped in relationship to eelgrass beds, and other estuarine resources.

2. Non-water dependent facilities. The applicant must construct all parking lots, administrative offices, storage buildings, and other non-water dependent facilities as follows.

(a) **150-feet** or more from any stream or water body (including wetlands) occupied by listed salmonids during any part of the year.

(b) **50-feet** or more from any stream or water body (including wetlands) that is not occupied by listed salmonids or designated as critical habitat, but discharges into a stream that is occupied or designated.

3. Water supply system. All water supply systems for enclosed mariculture facilities must be a closed, recirculating type and all water intake structures must have a fish screen installed, operated and maintained in accordance to NMFS' fish screen criteria.²⁷

4. Piscivorous bird deterrence. The applicant must fit all pilings, dolphins, and related structures with devices to prevent perching by piscivorous bird species.

IV. Activity History

Many of these activities were covered by Nationwide Permits that did not require notification to the Corps prior to the May 1999 listings. Therefore the Corps has limited records on the frequency of occur these activities in the past. In addition, the Washington State Department of Fish and Wildlife data submitted to the Corps was provided for Washington State as a whole. The Corps was unable to distinguish the frequency of occur in the Lower Columbia River alone.

²⁷ National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) <http://www.nwr.noaa.gov/1hydro/hydroweb/ferc.htm>.

Table 2 provides the limited documentation the Corps has for these activities in the mainstem Lower Columbia River, downstream of McNary Dam over the last 5 years. For Maintenance Dredging and Marinas, the total number of projects the Corps has on record is noted.

Table 2: Activity History

Activity	Year				
	2001	2000	1999	1998	1997
Erosion Control	0	2	1	6	9
Water Control Activities	0	1	0	0	3
Utility Lines	0	0	0	0	0
Road Construction, Repairs & Improvements	0	0	1	1	1
Site Preparation for Upland Construction of Building & Related Features	-	-	-	-	-
Piers and Boat Ramps	0	3	3	7	0
Other Minor Discharges	4	9	3	4	7
Installation & Repair of Aids to Navigation <i>- pre-May 99, no required notification</i>	0	0	0	0	0
Marinas - Maintenance of Existing Structures <i>- 11 marinas in Lower Columbia since 1970</i>	0	0	0	0	1
Installation of Small Temporary Floats <i>- pre-May 99, no required notification</i>	0	0	0	0	0
Structures in Fleeting & Anchorage Areas <i>- pre-May 99, no required notification</i>	0	0	0	0	0
Maintenance Dredging <i>- 143 authorizations in L. Columbia since 1970</i>	0	3	1	2	4
Return Water from Upland Contained Disposal Areas <i>- pre-May 99, no required notification</i>	0	0	0	0	0
Fish & Wildlife Harvest, Attraction Devices & Activities <i>- pre-May 99, no required notification</i>	0	0	0	0	0

V. AFFECTED ENVIRONMENT

For the purposes of programmatic consultations, Seattle District Corps has separated Washington State into five geographic regions: Coastal Washington Watersheds; Puget Sound, Hood Canal, Strait of Juan de Fuca, and Strait of Georgia Watersheds; Lower Columbia River Watersheds: Middle and Upper Columbia River Watersheds; and, Snake River Watersheds. This programmatic consultation applies only to the mainstem Columbia River in Region 3 – Lower Columbia River and the southern portion of Region 4 (Klickitat and Benton Counties).

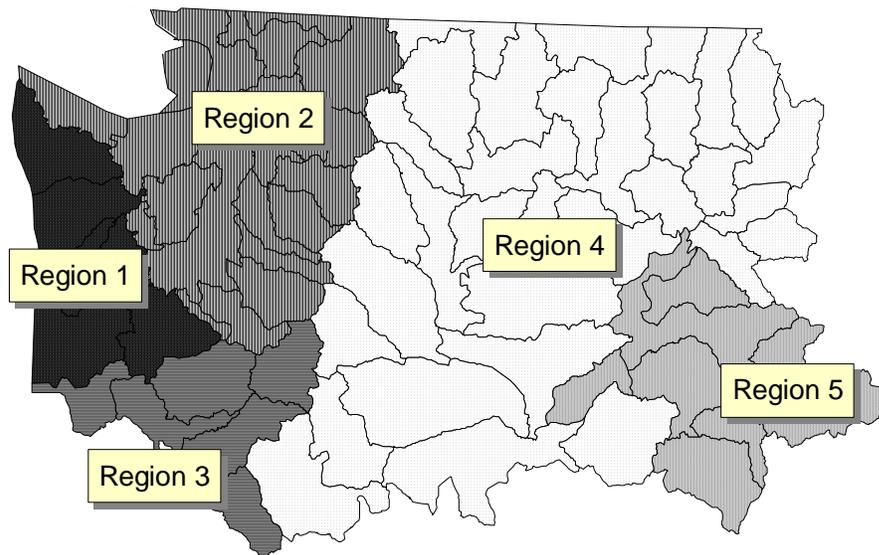
Discussions of each region includes the U.S. Geological Survey (USGS) Hydraulic Unit Codes (HUC) included within the region, the federally listed and proposed species present in the region, discussion of major land use activities

within the region, Clean Water Act 303(d) listed waters within the region, and, if available, a summary of the Limiting Factors Watershed Studies completed by Water Resource Inventory Area.

Figure 1: Map of Affected Environment Regions

Legend:

- Region 1 - Coastal Washington Watersheds
- Region 2 - Puget Sound, Hood Canal, Strait of Juan de Fuca and Strait of Georgia Watersheds
- Region 3 - Lower Columbia River Watersheds
- Region 4 - Middle and Upper Columbia River Watersheds
- Region 5 - Snake River Watersheds



Region 3 – Lower Columbia River Watersheds

Geographic Boundaries

The Lower Columbia River Watersheds include:

- Lower Columbia – Sandy watershed [HUC²⁸ 17080001 and WRIA²⁹ 28].
- Lewis watershed [HUC 17080002 and WRIA 27], and
- Lower Columbia – Clatskanie watershed [HUC 17080003, and WRIA 25]
- Upper Cowlitz watershed [HUC 17080004 and WRIA 26]
- Lower Cowlitz watershed [HUC 17080005 and WRIA 26]
- Lower Columbia watershed [HUC1708006, and WRIA 24 and 25]

The watersheds stretch into Clark, Cowlitz, Lewis, Pacific, Skamania, and Wahkiakum Counties.

Species Present

Federally listed and proposed species protected by NMFS that occur in these watersheds include the following. For species descriptions and the factors to their decline, see Appendix C.

Fish:

- | | |
|---|------------|
| • Columbia River chum (<i>Oncorhynchus keta</i>)
Designated critical habitat | Threatened |
| • Lower Columbia River chinook (<i>Oncorhynchus tshawytscha</i>)
Designated critical habitat | Threatened |
| • Lower Columbia River steelhead (<i>Oncorhynchus mykiss</i>)
Designated critical habitat | Threatened |
| • Middle Columbia River steelhead (<i>Oncorhynchus mykiss</i>) | Threatened |
| • Snake River fall chinook (<i>Oncorhynchus tshawytscha</i>)
Designated critical habitat
[Columbia River mainstem only] | Threatened |
| • Snake River spring/summer chinook
(<i>Oncorhynchus tshawytscha</i>)
Designated critical habitat
[Columbia River mainstem only] | Threatened |
| • Snake River sockeye (<i>Oncorhynchus nerka</i>)
Designated critical habitat
[Columbia River mainstem only] | Endangered |
| • Snake River steelhead (<i>Oncorhynchus mykiss</i>)
Designated critical habitat
[Columbia River mainstem only] | Threatened |

²⁸ Hydrologic Unit Code (HUC)

²⁹ Water Resource Inventory Area (WRIA)

- Upper Columbia River spring chinook (*Oncorhynchus tshawytscha*) Endangered
Designated critical habitat
[Columbia River mainstem only]
- Upper Columbia River steelhead (*Oncorhynchus mykiss*) Endangered
Designated critical habitat
[Columbia River mainstem only]
- Upper Willamette River chinook (*Oncorhynchus tshawytscha*) Threatened
Designated critical habitat
[Clark, Cowlitz, Pacific and Wahkiakum Counties]
- Upper Willamette River steelhead (*Oncorhynchus mykiss*) Threatened
Designated critical habitat
[Clark, Cowlitz, Pacific and Wahkiakum Counties]

Marine Mammals:

- Steller Sea Lion (*Eumetopias jubatus*) Threatened
[Columbia River mainstem up to the mouth of the Cowlitz River only]

Land Use Activities

Timber Harvest

The majority of the watersheds have experienced some levels of timber harvesting with most of the timber production focused in Wahkiakum County, the eastern portions Lewis, Cowlitz, and Clark Counties, and Skamania County.

As shown in Table 3, many of the waterbodies exceed state standards for temperature and dissolved oxygen. Waterbody impairments often associated with areas where the timber has been over harvested. Table 4 identifies limiting factors of excessive fine sediments, lack of large woody debris in streams and in large woody debris recruitment areas, and elevated summer water temperatures. These factors are associated with high forest road densities, removal of riparian habitat, and road construction in riparian areas.

Agricultural Production

Significant agricultural production occurs through out the Lower Columbia River watershed. Conversion of habitat to agricultural lands has resulted in loss of riparian habitat, unstable stream banks with poor cattle exclusion devices, excessive chemical levels in the water associated with pesticides and herbicides, high water temperatures, low dissolved oxygen levels and high levels of fecal coliform. Many streams exceed appropriate width/depth ratios, resulting in high temperatures, sheet flow at high waters, and inadequate velocity levels at low

flows.³⁰ As shown in Table 4, several waterbodies have issues with fish passage either due to road crossing or small dams constructed for irrigation of agricultural lands.

Urban Development

Primary impact associated with urban development in the Lower Columbia River Watersheds are the existence of several hydropower projects including the Bonneville Dam on the mainstem Columbia River. The series of dams along the Columbia River have blocked an estimated 12 million cubic yards of debris and sediment that would otherwise naturally flow down the Columbia, replenishing the shorelines along the Washington and Oregon Coasts.³¹

Associated industrial and harbor development have been significant with the Lower Columbia River watersheds, mainly along the mainstem Columbia River. One hundred miles of river channel within the mainstem Columbia River, it's estuary – Baker Bay, and Oregon's Willamette River have been dredged as a navigation channel by the Corps since 1878. Originally dredged to a depth of 20 feet minimum in 1878, the federal navigation channel of the lower Columbia River is now maintained at a depth of 40 feet and a width of 600 feet. The average amount dredged each year is 5.5 million cubic yards of material.³² The lower Columbia River supports five ports on the Washington State side: Kalama, Longview, Skamania County, Woodland and Vancouver. These ports primarily focus on the transport of timber and agricultural commodities. As shown in Table IV-5, there are several chemical exceedances in Lower Columbia River watersheds in the vicinity of the ports that are associated with industrial activities – such as arsenic, and PAHs.

Lower Columbia River watersheds have also been significantly altered by mining activities both in the past and ongoing. Many streams and rivers have excessive sediment levels and unstable riparian areas due to in-stream mining or upland mining with poor sediment and erosion control measures (See Table 4).

The most extensive urban development in the Lower Columbia River watersheds occurs in the Vancouver/Camas areas and the Centralia/Chehalis areas. Outside of these major urban areas, the majority of residential development is on septic systems. Common water contaminants associated with urban development and residential septic systems include excessive water temperatures, lowered dissolved oxygen levels, fecal coliform, and chemicals associated with pesticides and urban runoff. Excessive sediment levels are aggravated by additional sediment loading associated with the explosion of Mount St. Helens in 1980.

³⁰ Dyrland, R., pers. Comm. 11/20/2000.

³¹ Corps (1999)

³² Corps (1999)

Protected areas

The following federally protected areas occur in the Lower Columbia River Watersheds: Franz Lake National Wildlife Refuge (493 acres), Judy Bulter Hansen National Wildlife Refuge (4,757 acres), Lewis and Clark National Wildlife Refuge, Pierce National Wildlife Refuge (329 acres), Ridgefield National Wildlife Refuge (4,627 acres), Steigerwald Lake National Wildlife Refuge (627 acres), Goat Rocks Wilderness (105,023 acres)³³, Mount Rainer National Park, Mount Saint Helens National Volcanic Monument, and the Gifford Pinchot National Forest (1.3 million acres)³⁴.

Washington State protected Natural Area Preserves (NAP) that occur in the Lower Columbia River Watersheds include: Columbia Falls (Skamania County – 514 acres). The following Washington State protected Natural Resource Conservation Areas (NRCAs) occur in the Lower Columbia River Watersheds: Merrill Lake (Cowlitz County – 114 acres), and Table Mountain/Greenleaf Peak (Skamania County – 2,800 acres).

The following areas are designated Wildlife Areas protected by Washington State Department of Fish and Wildlife: Cowlitz Wildlife Area (Lewis County – 13,940 acres), St. Helens Wildlife Area (Cowlitz & Skamania Counties – 2,500 acres), and Shillapoo and Vancouver Lake Wildlife Area (Clark County – 1,550 acres).

Private protected lands in Lower Columbia Watersheds include: The Nature Conservancy – Robert W. Little (Puget Island) Preserve (Wahkiakum County – 30 acres) and Grays Bay Preserve (Wahkiakum County – 100 acres); and the Columbia Land Trust.

Impaired Waterbodies

All or portions of the waterbodies listed in Table 3 have been listed under Section 303(d) of the Clean Water as impaired waterways. The parameter(s) exceeded are noted for each waterbody. Full extents of the listed waterbodies may be obtained from Washington State Department of Ecology in the “Final 1998 Section 303(d) Listed Waterbodies for Washington State”, dated April 4, 2000.

³³ A portion of Goat Rocks Wilderness is located in Region 4

³⁴ A portion of the Gifford Pinchot National Forest is located in Region 4.

**Table 3: Section 303(d) Listed Waterbodies in
Lower Columbia River Watersheds**

Source: Final 1998 Section 303(d) List, Washington State Department of Ecology, April 4, 2000.

WRIA	WATERBODY NAME	PARAMETER EXCEEDED
24	COLUMBIA RIVER (Pacific County)	PCB-1254, Total Dissolved Gas
25	COLUMBIA RIVER (Wahkiakum County)	4,4'-DDE, Arsenic, Bis(2-ethylhexyl) Phthalate, Dieldrin, Dissolved Oxygen, Fecal Coliform, PCB –1248, PCB-1254, PCB-1260, Temperature, Total Dissolved Gas
25	ELOCHOMAN RIVER	Temperature
25	GERMANY CREEK	Temperature
25	GRAYS RIVER, W.F.	Temperature
25	LONGVIEW DITCHES	Dissolved Oxygen, Fecal Coliform, Lead, Turbidity
25	SACAJAWEA LAKE	4,4'-DDE, Chlordane, Dieldrin, PCB –1254, PCB-1260
26	BAIRD CREEK	Temperature
26	CISPUS RIVER	Temperature
26	CISPUS RIVER, N.F.	Temperature
26	COLUMBIA RIVER	Bis(2-ethylhexyl) Phthalate
26	COWEEMAN RIVER	Temperature
26	COWLITZ RIVER	Arsenic
26	EAST CANYON CREEK	Temperature
26	GOBLE CREEK	Temperature
26	GREEN RIVER	Temperature
26	HERRINGTON CREEK	Temperature
26	IRON CREEK	Temperature
26	MULHOLLAND CREEK	Temperature
26	SILVER CREEK	Temperature
26	WILLAME CREEK	Temperature
27	COLUMBIA RIVER (Clark & Cowlitz Counties)	4,4'-DDE, Arsenic, Bis(2-ethylhexyl) Phthalate, Dieldrin, PCB-1254, Temperature, Total Dissolved Gas
27	HATCHERY (FALLERT) CREEK	Temperature
27	KALAMA RIVER	Temperature
27	LEWIS RIVER, E.F.	Fecal Coliform, Temperature
27	LOCKWOOD CREEK	Fecal Coliform
27	McCORMICK CREEK	Fecal Coliform, Temperature
27	ROCK CREEK (NORTH)	Fecal Coliform
27	ROCK CREEK (SOUTH)	Fecal Coliform
27	YACOLT CREEK	Fecal Coliform
28	BURNT BRIDGE CREEK	Dissolved Oxygen, Fecal Coliform pH, Temperature
28	CHINA DITCH	Dissolved Oxygen, Temperature
28	CHINA LATERAL	Dissolved Oxygen, Temperature

WRIA	WATERBODY NAME	PARAMETER EXCEEDED
28	COLUMBIA RIVER (Skamania County)	Arsenic, Fecal Coliform, Sediment Bioassay, Temperature, Total Dissolved Gas
28	COUGAR CANYON CREEK	Dissolved Oxygen
28	COWPIE CREEK	Dissolved Oxygen
28	CURTIN CREEK	Fecal Coliform
28	DWYER CREEK	Dissolved Oxygen, pH
28	FIFTH PLAIN CREEK	Dissolved Oxygen, Fecal Coliform, pH, Temperature
28	GIBBONS CREEK	Fecal Coliform
28	LACAMAS CREEK	Dissolved Oxygen, Fecal Coliform, pH, Temperature
28	LAKE RIVER	Fecal Coliform, Sediment Bioassay, Temperature
28	MATNEY CREEK	Dissolved Oxygen, pH, Temperature
28	MILL CREEK	Fecal Coliform
28	MILL DITCH	Dissolved Oxygen, pH, Temperature
28	SALMON CREEK	Fecal Coliform, Temperature, Turbidity
28	SHANGHAI CREEK	Dissolved Oxygen, pH, Temperature
28	WEAVER (WOODIN) CREEK	Fecal Coliform

Table 4: WRIA 26 & 27 Salmonid Species Limiting Factors by Basin

Source: Washington Conservation Commission <http://www.conserver.org/salmon/index.php3>

WRIA	BASIN	LIMITING FACTOR
26	Entire WRIA	<ul style="list-style-type: none"> • LWD abundance is below habitat standards. • Poor riparian conditions. • Most of the historic off-channel & floodplain habitat is disconnected from the river by diking, hardening of the channels, & 1980 Mount St. Helens eruption. • Complete fish passage barriers at Mayfield, Mossyrock & Cowlitz Falls dams. Over 300 miles of formerly productive habitat is inaccessible or inundated by reservoirs.
26	<i>Recommendations</i>	<ul style="list-style-type: none"> • Continue to monitor impacts of the operation of dams on salmonids & success of reintroduction efforts above the dams. • Habitat restoration above the dams will provide minimal benefits to salmon recover without development of sustainable wild runs. • Develop critical areas ordinances to ensure protection of habitat for listed fish species • Decommission or repair roads that are contributing to chronic sediment to stream systems. • Increase LWD supplies in stream systems – both short- & long-term. • Speed the recruitment of mature conifers within riparian areas. • Reduce excessive water temperatures, especially in Coweeman, Toutle & Tilton Subbasins. • Augment stream flows & enhance rearing habitat during low-flow periods. • Maintain at least 60% of vegetation within each subbasin in trees > 25 years old to increase hydrologic maturity & minimize impacts to stream channels of increased peak flows.
26	Coweeman	<ul style="list-style-type: none"> • Floodplain habitat in lower 20 miles of the Cowlitz mainstem & lower Coweeman filled with Mount St. Helens deposits & disconnected from the river. • Rearing & over-wintering habitat very limited. • Basin hydrologically immature & subject to increase peak flows due to extensive logging & high road densities. • Excessive fine sediments to stream channels due to high road densities & 69 miles of stream adjacent roads. • Poor riparian conditions & LWD levels, especially along lower reaches due to diking & development. • Elevated water temperatures & turbidity in Coweeman due to lack of riparian cover. • Water quality in Cowlitz River generally good.
26	<i>Habitats to be Protected</i>	<p>Fall chinook spawning & rearing habitat within mainstem Coweeman River from the mouth of Goble Creek (RM 11.4) to Baird Creek (RM 25.9).</p> <ul style="list-style-type: none"> • Floodplain habitat between RM 4 & RM 7.5 within mainstem the Coweeman River. • Most productive tributaries - Mulholland, Baird & Goble creeks.

WRIA	BASIN	LIMITING FACTOR
26	<i>Recommendations</i>	<ul style="list-style-type: none"> • Reduce excessive water temperatures. • Decommission or repair road systems contributing sediment to stream channels (Rose Valley Road contributes 351 metric tons/year to Coweeman). • Increase instream LWD in appropriate stream channels. • Increase instream LWD in lower Cowlitz & Coweeman Rivers to increase & enhance off-channel & floodplain habitat. • Reduce land use activities within the subbasin that contribute to water quality problems (especially temperature & turbidity).
26	Lower Cowlitz	<ul style="list-style-type: none"> • Complete fish passage barrier caused by Mayfield Dam, blocking upstream passage to 80% of the historic habitat. • Altered hydrology due to Mayfield Dam. • Movement of sediments to downstream habitats blocked by Mayfield Dam. • In the mainstem Cowlitz, spawning & rearing habitat for fall chinook & steelhead limited to 8-mile section due to the Mayfield Dam. • Fish passage barriers in a number of the tributaries. • Key habitat areas & habitat diversity significantly limited in the mainstem Cowlitz & tributaries due to channel simplification & diking. • Riparian function substantially reduced due to grazing, agriculture, forestry & residential & commercial development. • Increased bank instability & associated excessive fine sediments throughout subbasin due to grazing, agriculture, forestry & residential & commercial development.
26	<i>Habitats to be Protected</i>	<ul style="list-style-type: none"> • Spawning & rearing habitat for fall chinook & steelhead in the side channels within the mainstem Cowlitz. • Monahan Creek provides important coho, steelhead, & fall chinook habitat. Characterized as having the best tributary habitat in the subbasin. • The upper reaches of Olequa (above Winlock) & Delameter creeks provide important spawning & rearing habitat for steelhead, cutthroat, & coho. • Upper Lacamas Creek may support a small population of chum salmon.
26	<i>Recommendations</i>	<ul style="list-style-type: none"> • Assess & mitigate for negative impacts to all anadromous fish species from the operation of the dams. • Restore & enhance side channels below the dams that provide critical spawning & rearing habitat for fall chinook & winter steelhead. • Maintain & restore riparian buffers, fence cattle out of streams, & minimize activities adjacent to streams that negatively impact anadromous habitat.
26	Toutle River	<ul style="list-style-type: none"> • Severely impacted salmonid populations & habitat due to 1980 eruption of Mount St. Helens. Most systems are naturally recovering except for North Fork Toutle. • Limited floodplain, off-channel & pool habitat due to 1980

WRIA	BASIN	LIMITING FACTOR
		<p>eruption.</p> <ul style="list-style-type: none"> • High width-to-depth ratios, poor riparian conditions & associated elevated stream temperatures. • Lack of instream cover & LWD, & unstable substrate conditions. • Increased peak flows & channel instability due to hydrologic immaturity & high road densities. • Excessive amounts of fine sediments due to high road densities & numerous stream adjacent roads. • Silver Lake watershed – access & water quality major limiting factors.
26	<i>Habitat to be Protected</i>	<ul style="list-style-type: none"> • South Fork & low-gradient reaches of its tributaries contained the most important habitat within the Toutle subbasin. • Elk & Devils creeks are the most productive steelhead tributaries to the Green River. • Hoffstadt & Alder Creeks are the most productive in the North Fork Toutle watershed. • Upper Wyant Creek provides important low-gradient coho habitat.
26	<i>Recommendations</i>	<ul style="list-style-type: none"> • Removal or alteration of the sediment retention structure (SRS) to facilitate natural recovery of the North Fork Toutle & downstream systems. • Address water quantity & water quality problems within the Silver Lake watershed. • Reduce road densities & the miles of stream adjacent roads within the subbasin. • Assess the condition of abandoned roads in the upper Toutle subbasin. • Replant degraded riparian areas with native conifers. • Enhance or restore off-channel rearing habitat.
26	Mayfield/Tilton	<ul style="list-style-type: none"> • Complete barrier due to Mayfield Dam. • Inundation of productive habitat & creation of predator habitat due to reservoir conditions. • Tilton River - Increased peak flows, inputs of fine sediments & channel instability due to timber harvest, high road densities & numerous stream adjacent roads. • Tilton River – over-winter survival is below expectations due to elevated peak flows & lack of pools & off-channel habitat for refuge. • Tilton River – spawning gravels scoured from many areas due to high flows & lack of LWD.
26	<i>Habitats to be Protected</i>	<ul style="list-style-type: none"> • Side-channel habitat below the town of Morton provides critical areas with refuge from high flows. • Winston Creek supports a “healthy” run of resident cutthroat trout. • The South Fork Tilton, the mainstem Tilton from Nineteen Creek (RM 22.9) to the falls (RM 25), & the West Fork Tilton provide some of the best habitat within the subbasin. • Coon, Snow, & Trout creeks provide ideal summer-rearing

WRIA	BASIN	LIMITING FACTOR
		areas for steelhead & resident trout.
26	<i>Recommendations</i>	<ul style="list-style-type: none"> • Monitor & increase efficiency of reintroduction efforts above the dams. Downstream migration success is critical to these efforts. • Increase rearing success in this subbasin by upgrading road locations, crossings, & other floodplain constrictions, reduce road densities, maintain hydrologic maturity, & restore & enhance floodplain connections & rearing habitat. • Supplement LWD in appropriate stream channels to provide instream structure & cover. • Enhance pool quality & spawning habitat with instream LWD. • Establish functioning riparian corridors within the subbasin to increase water quality & recruitment potential for LWD.
26	Riffle Lake	<ul style="list-style-type: none"> • Complete barrier due to Mossyrock Dam. • Downstream migrants (coho & chinook) unable to navigate 23-mile long lake. • Reintroduction of anadromous salmonids not feasible until downstream migration addressed.
26	Cispus River	<ul style="list-style-type: none"> • Natural upstream passage & downstream migration blocked by a system of dams. • Downstream migrants captured at Cowlitz Falls Dam & transported below the dams. • Reduction in spawning, incubation, & fry colonization habitat & creation of predator habitat in lower reaches of Cispus River & Copper Canyon Creek by Lake Scanewa. • Increased peak flows, excessive sediment delivery to streams, bank instability due to road construction & timber harvests. • Reduction of riparian function & instream LWD due to excessive road construction & timber harvest. • Some areas in subbasin (though limited) have properly functioning habitat.
26	<i>Habitats to be Protected</i>	<ul style="list-style-type: none"> • Highest priority – protect North Fork Cispus system. Provides some of the best functional habitat in the subbasin. • Off-channel habitat within the mainstem Cispus between Iron Creek (RM 8.2) & the North Fork Cispus (RM 19.9) provides important rearing habitat for juveniles. • Enhance the fair-quality habitats in the North Fork Cispus, Yellowjacket Creek, & Greenhorn Creek, (in order of priority). • Maintain the high-quality habitats in Woods, Orr, & Iron creeks.
26	<i>Recommendations</i>	<ul style="list-style-type: none"> • Reintroduction efforts in the entire subbasin are dependent upon successful operation of the Cowlitz Falls Fish Collection Facility. • Improvement of capture efficiency at the Cowlitz Falls dam critical to recovery efforts. • Address road related problems on USFWS land that reduce floodplain connectivity & limit rearing habitat within the subbasin. • Enhance existing instream habitat by supplementing LWD. Utilize LWD that collects at Mossyrock Dam for projects within the Cispus subbasin. • Manage early- & mid-structural stands within riparian reserves

WRIA	BASIN	LIMITING FACTOR
		<p>to develop late-structural characteristics in the Cispus subbasin.</p> <ul style="list-style-type: none"> Flow (cfs) thresholds for drawdowns should be reevaluated, & if possible increased, to assure that juveniles are not flushed over the dam into Riffe Lake.
26	Upper Cowlitz	<ul style="list-style-type: none"> Natural upstream passage & downstream migration blocked by a system of dams. Downstream migrants captured at Cowlitz Falls Dam & transported below the dams. Trap efficiency varies with flow & smolts often flushed into Riffe Lake during drawdowns. Inundation of spawning, incubation & fry colonization habitat & creation of predator habitat by Lake Scanewa. Natural barriers to anadromous fish passage on many tributaries within 1-2 miles of the confluence with the upper Cowlitz River. Large portion of subbasin habitat located in the low-gradient areas of the tributaries. Low-flow passage problems & reduced habitat quality in tributaries due to channel alterations & increased sediment inputs. Limited pool habitat, cover & habitat diversity in mainstem upper Cowlitz & lower reaches of tributaries due to lack of LWD. LWD recruitment is low.
26	<i>Habitat to be Protected</i>	<ul style="list-style-type: none"> Pristine spawning & rearing habitat critical to spring chinook in the lower reaches of the Ohanapecosh & Clear Fork. Critical spawning & rearing habitat for all species in low-gradient tributaries. Skate Creek has the best available habitat in the upper subbasin. Riparian habitat along the mainstem Cowlitz & tributaries.
26	<i>Recommendations</i>	<ul style="list-style-type: none"> Continue efficiency monitoring at the dam & improve the efficiency of the collection equipment & process. Increase instream cover & habitat diversity in the upper reaches of Lake Skanewa to reduce the chance of flushing juveniles during drawdowns. Enhance & restore rearing & spawning habitat within the low-gradient reaches of tributary habitat. Restore riparian habitat along the mainstem Cowlitz & its tributaries. Supplement LWD in appropriate response reaches.
27	Entire WRIA	<ul style="list-style-type: none"> LWD abundance below habitat standards. Poor riparian conditions. Impaired water quantity – low flows & increased peak flows. Most of the historic off-channel & floodplain habitat has been disconnected from the river due to diking & hardening the channels.
27	<i>Recommendations</i>	<ul style="list-style-type: none"> Develop or revise & update land use ordinances that are meant to protect critical habitat for listed fish species.

WRIA	BASIN	LIMITING FACTOR
		<ul style="list-style-type: none"> • Protect & enhance riparian habitat with sufficiently sized buffers & speed recruitment of conifers to increase the potential future supply of LWD; • Supplement LWD within productive tributaries after careful consideration of the hydraulics & suitability of the site; • Identify ways to reduce water temperatures, increase water quality, augment minimum streamflows, & replace passage barriers.
27	Kalama River	<ul style="list-style-type: none"> • Loss of riparian function & instream LWD due to excessive timber harvest. • Alternations in hydrology due to excessive timber harvest. • Most of the historic floodplain diked & disconnected from the river to protect industrial development & I-5 highway. • Rearing & over-wintering habitat for juvenile coho degraded by loss of floodplain habitat. • Creation of predator habitat & excessive water temperatures at the mouth of the Kalama due to growth of a wide & shallow bar. • Limited access & rearing habitat during low flows in many tributaries due to accumulation of coarse sediments at the mouths. • Impaired spawning substrates in mainstem Kalama due to accumulation of fine sediments.
27	<i>Habitat to be Protected</i>	<ul style="list-style-type: none"> • Fall chinook, chum spawning grounds in the lower mainstem. • Winter steelhead spawning & rearing habitat in the mainstem above the lower falls. • Lower river tributaries & off-channel rearing areas for coho salmon. • The five most productive tributaries for summer steelhead (Gobar, Wildhorse, Langdon, & Lakeview Peak creeks, & the North Fork Kalama).
27	<i>Recommendations</i>	<ul style="list-style-type: none"> • Assess & develop solutions to conditions on the Kalama River bar. • Assess & develop solutions to the extensive deposits of coarse sediments that have accumulated in tributary mouths. • Increase &/or enhance off-channel & rearing habitat within the Kalama River. • Repair &/or decommission roads. • Minimize the amount of timber harvest occurring within the basin at any one time to maintain hydrologic maturity & minimize peak flows.
27	Lower Lewis River	<ul style="list-style-type: none"> • System of dams block passage to 80% of the historic anadromous habitat. • Rearing habitat for juvenile salmonids is limited by lower floodplain being diked & disconnected from the river. • Cedar Creek provides majority of spawning & rearing habitat for steelhead & coho for the Lewis River system. ➤ elevated water temperatures, low summer flows, & spawning gravels cemented with fine sediments all limiting factors.

WRIA	BASIN	LIMITING FACTOR
		<ul style="list-style-type: none"> • Bull trout/Dolly Varden found above dams in reservoirs & in Cougar, Rush & Pine creeks. ➤ excessive fine sediment, loss of riparian habitat, & elevated stream temperatures due to the eruption of Mt. Saint Helens, timber harvest & road construction.
27	<i>Habitat to be Protected</i>	<ul style="list-style-type: none"> • The Cedar Creek basin provides most of the spawning & rearing habitat for coho, & steelhead within the Lewis River. • Native fall chinook spawning grounds & juvenile rearing areas. • Rush, Cougar, & Pine creeks provide the only spawning habitat for bull trout.
27	<i>Recommendations</i>	<ul style="list-style-type: none"> • Reintroduce anadromous fish above the dams. • Increase &/or enhance off-channel & rearing habitat within the lower Lewis River & within Cedar Creek. • Reduce fine sediment inputs to Cedar Creek & its tributaries. • Reduce water temperatures & augment low flows within the Cedar Creek basin.
27	East Fork Lewis River	<ul style="list-style-type: none"> • Large portions of East Fork watershed repeatedly burned during the first half of the century. • Hydrology, structure, composition, & age-class distribution of plant communities impacted by burning. • Riparian & instream habitat impacted by burning. • Elevated water temperatures in many tributaries & in the lower East Fork. • Increased high rates of erosion, channel instability, & loss of spawning habitat for fall chinook due to instream gravel pits. • Floodplain habitat diked or disconnected from the river. • Over-winter habitat reduced. • Rearing habitat in the summer for juvenile salmon & steelhead limited by low flows.
27	<i>Habitat to be Protected</i>	<ul style="list-style-type: none"> • The lower 10 miles of the East Fork provides most of the limited floodplain habitat that remains within WRIA 27, & critical fall chinook & chum spawning habitat. • Rock Creek (upper) & the mainstem above Sunset Falls provide the most critical winter & summer steelhead spawning & rearing habitat in the East Fork basin.
27	<i>Recommendations</i>	<ul style="list-style-type: none"> • Assess changes in bank & channel stability, erosion rates, water quality, & predation rates resulting from the recent avulsion into the Ridgefield Pits. • Identify both short- & long-term solutions that will help restore Ridgefield Pits habitat. • Reduce water temperatures & improve overall water quality, & to augment flow during low-flow periods. • Reconnect & enhance limited off-channel & floodplain habitat.

Region 4 – Middle and Upper Columbia River Watersheds

Region 4 includes all of the Middle and Upper Columbia River watersheds from the Skamania/Klickitat County line and upstream. This programmatic consultation is limited to only the southern portions of Region 4 – the mainstem Columbia River downstream of McNary Dam flowing through Klickitat and Benton Counties. The general discussion on affected environment includes the entire Region but the Section 303(d) listings (Table 5) and the Limiting Factors (Table 6) include only those areas flowing into the Columbia River downstream of McNary Dam.

Geographic Boundaries

Watersheds flowing into the Columbia River downstream of McNary Dam include:

- Middle Columbia – Lake Wallula Watershed [HUC 17070101 and WRIA 31].
- Middle Columbia – Hood Watershed [HUC 17070105 and WRIA 29 and 30].
- Klickitat Watershed [HUC 17070106 and WRIA 30].

Species Present

Federally listed and proposed species protected by NMFS that occur in these watersheds include the following. For species descriptions and the factors to their decline, see Appendix C.

Fish:

- Lower Columbia River chinook (*Oncorhynchus tshawytscha*) Threatened
Designated critical habitat
[Downstream of the Grays and White Salmon Rivers only]
- Middle Columbia River steelhead (*Oncorhynchus mykiss*) Threatened
[Downstream of the Yakima River only]
- Snake River fall chinook (*Oncorhynchus tshawytscha*) Threatened
Designated critical habitat
[Columbia River mainstem only]
- Snake River spring/summer chinook (*Oncorhynchus tshawytscha*) Threatened
Designated critical habitat
[Columbia River mainstem only]
- Snake River sockeye (*Oncorhynchus nerka*) Endangered
Designated critical habitat
[Columbia River mainstem only]
- Snake River steelhead (*Oncorhynchus mykiss*) Threatened
Designated critical habitat
[Columbia River mainstem only]

- Upper Columbia River spring chinook (*Oncorhynchus tshawytscha*) Designated critical habitat Endangered
- Upper Columbia River steelhead (*Oncorhynchus mykiss*) Designated critical habitat Endangered

Land Use Activities

Timber Harvest

Timber harvest activities in the Middle and Upper Columbia River watersheds occur along the western portion of the region in the Cascade Mountains within and near the Gifford-Pinchot National Forest, Mount Baker-Snoqualmie National Forest, and Wenatchee National Forest. Additional timber harvest activities occur in the northeast portions of the region within and near the Colville National Forest, Kaniksu National Forest and Okanogan National Forest.

As shown in Table 5, many of the waterbodies exceed state standards for temperature, sedimentation, and dissolved oxygen. Waterbody impairments often associated with areas where the timber has been overharvested, high forest road densities exist, and riparian habitat has been removed.

Agricultural Production

Significant agricultural production occurs through out the Middle and Upper Columbia River watershed. Conversion of habitat to agricultural lands has resulted in loss of riparian habitat, unstable stream banks with poor cattle exclusion devices, excessive chemical levels in the water associated with pesticides and herbicides, high water temperatures, low dissolved oxygen levels, high levels of fecal coliform, and low flow problems due to water withdrawals for irrigation. As shown in Table 6, several water bodies have issues with fish passage either due to road crossing or small dams constructed for irrigation of agricultural lands.

Agricultural production has also increased disturbance related to invasive plant species. Purple loosestrife, an invasive plant species, has taken over 23,000 acres of wetlands in Grant County alone, altering important habitat for animal and plant species.³⁵

Urban Development

The primary impact to the Middle and Upper Columbia River watersheds by urban development is the extensive series of dams and hydropower plants throughout the region. Ten hydropower facilities exist on the mainstem Columbia River.

³⁵ WDNR (2000), p. 49

The creation of the dams have restricted stream flows, flooded wildlife habitat, and introduced chemicals associated with hydropower facilities and transformers into the water bodies (See Table 5). The 51 river miles of Hanford Reach are the only remaining non-tidal unimpounded portions of the Columbia River.³⁶

The main populations in the region are centered around the Spokane area in the northeast, Ellensburg and Yakima in the center of the region, and the Tri-Cities of Richland, Kennewick and Pasco in the southern portion of the region. Outside of these major urban areas, the majority of residential development is on septic systems. Common water contaminants associated with urban development and residential septic systems include excessive water temperatures, lowered dissolved oxygen levels, fecal coliform, and chemicals associated with pesticides and urban runoff. Three ports exist within the region – Bingen, Pasco and Richland. As shown in Table 5, industrial chemical contaminants associated with port activities are at elevated levels in the water column.

Protected areas in Watersheds flowing into the Columbia River Downstream of McNary Dam

The following federally protected areas occur in watersheds flowing into the Columbia River downstream of McNary Dam: Columbia National Wildlife Refuge (23,000 acres), McNary National Wildlife Refuge (3,629 acres), Columbia River Gorge National Scenic Area (80 river miles and 292,500 acres), White Salmon Wild-n-Scenic River (Total of 9 miles designated Scenic)³⁷, Mt. Adams Wilderness (47,280 acres), and Gifford Pinchot National Forest (1.3 million acres)³⁸.

The following Washington State protected Natural Area Preserves (NAP) occur in watersheds flowing into the Columbia River downstream of McNary Dam: Badger Gulch (Klickitat County – 180 acres), Cleveland Shrub Steppe (Klickitat County – 640 acres), Columbia Hills (Klickitat County – 3,593 acres), and Trout Lake (Klickitat County – 918 acres).

The Washington State protected Natural Resource Conservation Areas (NRCAs) that occur in watersheds flowing into the Columbia River downstream of McNary Dam include: White Salmon Oak (Klickitat County – 315 acres).

There are no designated Wildlife Areas protected by Washington Department of Fish and Wildlife in watersheds flowing into the Columbia River downstream of McNary Dam.

³⁶ WDNR (2000), p. 26

³⁷ Designated area: From its confluence with Gilmer Creek, near the town of B Z Corner, to its confluence with Buck Creek.

³⁸ A portion of the Gifford Pinchot National Forest is located in Region 3.

Wilderness Land Trust (Klickitat County) is a private protected land in a watershed flowing into the Columbia River downstream of McNary Dam.

Impaired Waterbodies

All or portions of the waterbodies listed in Table 5 have been listed under Section 303(d) of the Clean Water as impaired waterways. The parameter(s) exceeded are noted for each waterbody. Full extents of the listed waterbodies may be obtained from Washington State Department of Ecology in the “Final 1998 Section 303(d) Listed Waterbodies for Washington State”, dated April 4, 2000.

Table 5: Section 303(d) Listed Waterbodies in Lower/Middle Columbia River Watersheds Downstream of McNary Dam

Source: Final 1998 Section 303(d) List, Washington State Department of Ecology, April 4, 2000.

WRIA	WATERBODY NAME	PARAMETER EXCEEDED
29	BEAR CREEK	Temperature
29	EIGHTMILE CREEK	Temperature
29	INDIAN CREEK	Temperature
29	RATTLESNAKE CREEK	Fecal Coliform, Temperature
29	TROUT LAKE CREEK	Fecal Coliform
29	WHITE SALMON RIVER	Fecal Coliform
30	BLOCKHOUSE CREEK	Instream Flow
30	BLOODGOOD CREEK	Instream Flow
30	BOWMAN CREEK	Instream Flow
30	BUTLER CREEK	Temperature
30	COLUMBIA RIVER	Temperature, Total Dissolved Gas
30	LITTLE KLICKITAT RIVER	Instream Flow, Temperature
30	LITTLE KLICKITAT RIVER, EAST PRONG	Temperature
30	LITTLE KLICKITAT RIVER, WEST PRONG	Temperature
30	MILL CREEK	Instream Flow
30	SWALE CREEK	Instream Flow, Temperature
31	COLUMBIA RIVER	Arsenic, Sediment Bioassay, Temperature, Total Dissolved Gas, pH Temperature

Table 6: WRIA 29, 30, and 31 Salmonid Species Limiting Factors by Basin

Source: Washington Conservation Commission <http://www.conserver.org/salmon/index.php3>

WRIA	BASIN	LIMITING FACTORS
29	Wind River Watershed	<ul style="list-style-type: none"> • An historically important source for production of anadromous fish in the Lower Columbia river basin. • The Wind River remains as a viable anadromous fish producer even though its habitat has been severely impacted. • Historic alterations include: <ul style="list-style-type: none"> ➤ Hydroelectric development in the White Salmon River. ➤ Construction of Bonneville Dam with its associated pool. ➤ Logging in the Gifford Pinchot National Forest. ➤ Poorly designed & installed culverts, especially along State Highway 14. • Limiting factors include: <ul style="list-style-type: none"> ➤ Timber harvest impacts with stream cleanouts, timber harvest in the riparian area, a lack of LWD, mass bedload movement. ➤ Presence of a dam with a poorly designed fish ladder. ➤ Loss of floodplain capacity & increased siltation.
29	<i>Recommendations</i>	<ul style="list-style-type: none"> • Removal of Conduit Dam on the White Salmon River – blocks anadromous fish passage at RM 3.3 since 1919. • Continuing ongoing restoration efforts in the U.S. Northwest Forest Plan & with the Wind River Watershed Council.
30	Klickitat Watershed	<ul style="list-style-type: none"> • 1350 square miles • The Yakima Indian Nation reservation occupies the northern 56% of the watershed. Approximately 90% of the non-reservation land is privately held. • Approximately 75% of the land is forested, & is mostly managed for commercial timber production & grazing. Most of the remaining 25% is agricultural land (orchards, hay, & pasture); of this, about 25% is irrigated. • Urban development is limited to the city of Goldendale (pop. 3500) & the unincorporated towns of Lyle, Klickitat, & Glenwood and, combined with rural residential use, occupies less than one-half of one percent of the watershed. • Fish Passage Limiting Factors: <ul style="list-style-type: none"> ➤ Lack of access to potential habitat due to the presence of natural barriers to migration is a major limitation of the production potential of the watershed. ➤ Artificial barriers include the Klickitat Hatchery weir, the Old Champion Mill Sluiceway on Snyder Creek, & numerous road culverts on both public & private roads. ➤ Low flow/thermal barriers are found on Swale Creek & the Little Klickitat River. ➤ Poor design & operation of the fishway/tunnel complex at Castile Falls. ➤ Difficult fish passage at Lyle Falls. ➤ Difficult fish passage at Little Klickitat Falls.

WRIA	BASIN	LIMITING FACTORS
		<ul style="list-style-type: none"> • Floodplains/Wetlands/Riparian Areas limiting factors: <ul style="list-style-type: none"> ➤ Development of floodplains & wetlands is naturally limited over a large portion of the watershed; deeply incised canyons with narrow valley floors comprise most of the mainstem, as well as substantial portion of most fish bearing tributaries. ➤ Degraded riparian habitat & encroachment of the limited floodplain by roads & rail lines along the Little Klickitat River (RM 12 to RM 18), along Swale Creek (RM 10 to RM ??), & along the mainstem Klickitat River above Castile Falls (RM 77 to RM 85). ➤ In the canyon reaches, riparian areas appear to be relatively intact; steep hill slopes tend to limit access, & so much of the riparian forest remains. ➤ On the plateau reaches where agricultural & urban land uses occur, the riparian forest has been almost entirely removed, or is in a condition such that only minimal amounts of necessary ecological functions can be provided. • Sedimentation & turbidity limiting factors: <ul style="list-style-type: none"> ➤ Land-use related sediment sources in this watershed occur as a result of forest practices (e.g. harvesting, skidding, & road building across or adjacent to a stream), agricultural practices (e.g. rill irrigation, streamside grazing), or residential or commercial construction (land clearing & excavation in the vicinity of a stream). ➤ Naturally-generated glacial sediments entering the Klickitat River at RM 53.8 & RM 63.1. ➤ Damaged meadows & eroded/compacted streambanks along the Klickitat River (RM 77 to Rm 85). ➤ Eroded/compacted streambanks along the Little Klickitat River (RM 12 to RM 18). ➤ Eroded/compacted streambanks along Swale Creek (RM 10 to RM ??). • Chronic erosion from stream-adjacent logging roads (various locations in the watershed). • Water Quantity/Quality limiting factors: <ul style="list-style-type: none"> ➤ Insufficient flows to support fish populations (anadromous & resident) in Swale Creek & Little Klickitat River & their tributaries. ➤ High temperatures in Butler Creek due to lack of riparian shading. ➤ Lack of riparian shading along Swale Creek from RM 10 to RM ??, resulting in high temperatures at low flows. ➤ Lack of riparian shading along the Little Klickitat River from RM 12 to RM 18, resulting in high temperatures at low flows.
30	<i>Recommendations</i>	<ul style="list-style-type: none"> • Comprehensive culvert inventory & survey of inaccessible habitat. • Restoration of the Lower Snyder Creek • Assessment of floodplain connectivity & riparian condition, with a focus on plateau reaches.

WRIA	BASIN	LIMITING FACTORS
		<ul style="list-style-type: none"> • Watershed-scale evaluation on sediment sources & sinks, including relative magnitudes & habitat impacts. • An evaluation of the relative contribution of natural & land use factors (particularly water withdrawals) on low flows in streams identified as "water quality impaired" for instream flows. • Coordination of stream temperature data collection & riparian inventory to identify reaches which are most responsive to riparian zone planting & restoration in streams identified as "water quality impaired" for temperature.
31	Rock-Glade Watershed	<ul style="list-style-type: none"> • 1650 square miles • Erosion-resistant nature of extensive basalt flows has resulted in the creation of deep (500 to 800 feet), steep-walled canyons & has severely constrained floodplain development along substantial portions of the streams within the watershed. • In headwaters & steep canyon streams, fish habitat quality is generally fair to poor due to natural conditions, with little suitable spawning & rearing habitat. • Below the canyon reaches, streams enter low-gradient alluvial valleys. Fish habitat in these sections is highly variable, ranging from poor to excellent. • Over 90% of land base is privately owned. • Almost 50% of the land is in agricultural use (primarily wheat & other dryland crops). • 37% is in non-forested range. • Less than 10% of the watershed is forested, primarily in the headwaters of Rock Creek & Pine Creek - much of the forested land also has active grazing allotments. • Urban development occupies less than one percent of the watershed & is limited to the city of Kennewick (pop. 49,000) & a number of small, unincorporated towns. • Fish Passage limiting factors: <ul style="list-style-type: none"> ➤ Barrier culverts at SR 14 on Pine Creek preclude access to potential steelhead habitat. • Floodplains/Wetlands/Riparian areas limiting factors: <ul style="list-style-type: none"> ➤ Accelerated channel incision (entrenchment, downcutting) due to grazing & trampling by cattle in & near stream banks. ➤ Channel widening & obliteration of riparian zones caused by a 75 to 100 year flood event in 1996. ➤ Cattle watering at, or in the vicinity of, spring areas may have adverse impacts on water quality. ➤ Grazing & forest practices have resulted in removal of or damage to riparian vegetation & compaction & erosion of stream banks & adjacent floodplain areas, adversely impacting functional quality of riparian areas. • Water Quantity/Quality limiting factors: <ul style="list-style-type: none"> ➤ Low or non-existent flows in all streams during the late summer, fall, & early winter will limit or preclude utilization by fall spawning adults (chinook, coho), limit mobility of juveniles

WRIA	BASIN	LIMITING FACTORS
		<p>of all species, & may result in mortality due to stranding.</p> <p>➤ High stream temperatures in the lower portions of all streams during the summer & early fall will limit mobility of juveniles of all salmonid species, & may result in mortality due to thermal stress.</p>
31	<i>Recommendations</i>	<ul style="list-style-type: none"> • Restrict grazing activity where functional floodplains & riparian areas are becoming reestablished. • Further investigation of fish utilization & habitat availability & quality, to be conducted on all accessible or potentially accessible streams. • Further investigation of potential barriers should be conducted on all fish bearing streams, using an approved assessment & inventory protocol. • More detailed evaluations of the condition of channels, floodplains, wetlands, & riparian areas. Identification of sediment sources, sinks, & sediment related impacts to habitat. • A stream temperature study to provide a better understanding of the causative factors of high stream temperatures.

VI. CUMULATIVE EFFECTS

A. Scope

In the context of the Endangered Species Act (ESA), cumulative effects encompass the effects of future State, tribal, local or private actions that are reasonably certain to occur in the covered area. The cumulative effects information was only available at the Washington State level versus the scope of the programmatic consultation (Lower Columbia River). Future Federal actions, including those that are unrelated to the proposed action, are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

Cumulative effects, in the context of Section 7 consultation, are generic to the area of consideration and, other than temporally, not related to the Federal action. The cumulative effects analysis is therefore independent of the specific habitat rehabilitation/restoration activities (or any other Federal action, for that matter) addressed in this programmatic biological assessment. Future Federal actions, including future Corps regulatory actions, will be addressed via future individual or programmatic Section 7 consultations.

Activities covered by this programmatic consultation will be clustered along the mainstem of the Lower Columbia River, downstream of McNary Dam and associated shorelines. Some of the activities may occur in adjacent areas to the mainstem of the Lower Columbia River. Non-Federal actions occurring concurrently with the covered activities will be similarly distributed across the

Lower Columbia River watershed. This cumulative effects analysis addresses impacts in the context of general trends in population and land-use within Washington State.

B. Population

Washington's current population of about 5.8 million people has increased by about 1 million since 1990. Based on 2000 Census data, recent population growth, on a percentage basis, has been greatest in Clark (45% increase since 1990), San Juan (40 % increase), and Grant (37% increase) Counties. King, Pierce, Snohomish, and Clark Counties each gained more than 100,000 people in the 1990s. Population densities in the state are highest in the lowland areas surrounding the Puget Sound, the Yakima River valley, Clark and Cowlitz County areas along the Columbia River, the Spokane area, the I-5 corridor in Lewis County, and the northern edge of the Olympic peninsula. Statewide, average population density is about 89 people per square mile (ranging from 817 people/square mile in King County to 3.4 people/square mile in Garfield County).

Forecasts for population growth predict an additional 1.2 to 2.5 million people residing in Washington by 2020.³⁹ In the shorter term, between 6 and 6.5 million are predicted to call Washington home by 2005. Future growth patterns should mirror historical patterns, with most growth in the Puget Sound area, along the I-5 corridor, and in selected valleys and highway corridors in eastern Washington.

C. Residential, Commercial, and Infrastructure Development

Intuitively, population growth results in increasing residential and commercial development.⁴⁰ Improvements and upgrades to infrastructure (including highways, other transportation facilities, pipelines, power lines, and power plants) will likely track closely with increased residential and commercial development. Primary pathways of potential effects of land development include direct habitat loss, decreased water quality, contamination of waterways and uplands, changes to runoff patterns, habitat fragmentation, isolation of populations, and loss of habitat diversity. In general, as development increases the quantity and quality of habitat suitable for threatened and endangered species typically decreases. Based on past trends and types of development, future residential, commercial, and infrastructure development will likely lead to further habitat degradation. Actions taken to mitigate for the potential impacts of development may help slow the rate of habitat degradation.

³⁹ OFM, 1999.

⁴⁰ Recent trends in shoreline permits issued throughout the state do not correspond with the observed increase in population. In 1997 and 1998, total of 799 and 838 shoreline permits, respectively, were issued or denied statewide (OFM, 1999), the two lowest totals since 1979 (the earliest year for which data was obtained). The observed trend may reflect trends in shoreline development or changes in the Shoreline Management Act.

D. Agriculture

Trends in agricultural lands are dependent upon a wide variety of factors. The acreage of agricultural land in Washington has remained essentially constant since 1945.⁴¹ Types of agricultural activities vary over time based on availability of water, crop markets, and technological innovation. In eastern Washington, federal management of the Columbia River system (itself subject to Section 7 consultation) determines, to a large extent, the price and availability of water for agricultural production.

Assuming future trends mirror the historical pattern, substantial additional impacts to fish and wildlife due to agriculture are not expected. However, in many areas of the state, certain ongoing agricultural practices (such as irrigation, chemical application, and regular habitat disturbance in agricultural areas) are likely to prevent habitat from reaching properly functioning conditions for listed species.

E. Fisheries

Fishing activities result in direct take of listed fish species and decreased forage base for other listed mammal and bird species. In Washington, salmon catches have steadily declined since the early 1970's.⁴² For example, in 1975, about 1.3 million pounds of chinook salmon were caught by commercial, tribal, and sport fisheries. In 1995, the total weight of the chinook salmon catch was about 240,000 pounds. Other fish stocks have also experienced substantial population declines. Herring stocks in Puget Sound have decreased from a high of about 25,000 tons in 1979 to less than 10,000 tons in 1999.⁴³ Rockfish stocks have decreased by 75 percent from peak spawning levels in the 1970s.⁴⁴ Lingcod populations in the northern Puget Sound and the Strait of Georgia are estimated at approximately 2 percent of that in 1950.⁴⁵ Imperiled fish populations have led to decreased fishing pressure. For example, the number of licensed commercial fishing boats in Washington has steadily decreased from 7,889 vessels in 1980 to 2,494 vessels in 1998.⁴⁶

Even if fish catches level off, impacts to listed species, particularly listed salmonids, from fishing activities are expected to continue. Catch targeted on fish produced at hatcheries inevitably results in some bycatch of co-occurring wild fish, including wild fish that are now listed as threatened or endangered. Even catch-and-release fisheries may cause lethal or sub-lethal adverse effects to listed fish. Harvest of forage species may imperil other listed species.

⁴¹ OFM, 1999.

⁴² DNR, 2000.

⁴³ DNR, 2000.

⁴⁴ DNR, 2000.

⁴⁵ DNR, 2000.

⁴⁶ DNR, 2000.

Assuming that fisheries continue to catch listed species or their forage base, adverse effects of such harvest will continue.

F. Forestry

Timber harvest in Washington State in the 90's is lower than any period since the late 1970's.⁴⁷ Concentrated mainly in western Washington, an annual total of just over 4 billion board feet was produced by Washington forests from 1993-96, compared with a high of slightly more than 7 billion board feet in each 1987 and 1988.⁴⁸ Of the total timber harvest, between 75 and 90 percent of the harvest is produced from non-federal lands for any given year. Taking just non-federal lands into consideration, timber harvest has fluctuated fairly tightly around an average of about 4.6 billion board feet.

In Washington, timber harvest typically involves clear-cutting techniques. Impacts due to clear-cutting and forest roads have been well documented.⁴⁹ Clear-cutting impacts are long lasting and additive. Although the rate of harvest appears to be slowing and improved best forestry practices have been implemented, the collective impacts of past and reasonably foreseeable future forestry activities are likely to result in additional future degradation of habitat for listed species.

G. Pollutant Discharge

Air and water pollution can degrade habitat and have lethal and sub-lethal effects on fish and wildlife. Increased population typically causes increased air and water pollution. Developed areas also generate effluent and runoff is often polluted with a variety of substances. In the early 1990's, Washington led the nation in the weight of pollutants discharged directly to surface waters.⁵⁰ As of 1999, nearly 60 percent of the lakes, streams, and estuaries for which there is data fail to meet water quality standards.⁵¹ Extremely high concentrations of polychlorinated biphenyls (PCBs) in the blubber of orca whales in Puget Sound make them among the most contaminated marine mammals on earth.⁵² Clearly, pollutants loads in Washington waters have reached levels of concern.

Ongoing State cleanup activities will help to mitigate the more acute pollutant sinks and sources in some parts of the state (Federal cleanup activities are intentionally excluded from the ESA cumulative effects analysis). While it is difficult to estimate future trends in pollutant discharge, discharges will likely continue in the future and are very likely to degrade habitat for listed species.

⁴⁷ OFM, 1999.

⁴⁸ OFM, 1999.

⁴⁹ Beechie, et al., 1997; Kiffney et al., in review; Pess et al., 1999

⁵⁰ DNR, 2000.

⁵¹ DNR, 2000.

⁵² DNR, 2000.

H. Other Activities

Other non-Federal activities (recreation, poaching, waste disposal, etc.) also have the potential to affect listed species in the future. Taken individually, any given activity may have an inconsequential effect on listed species. However, when viewed as a whole and in the context of past trends, we predict continued degradation of the status of listed species and their habitats.

Our analysis is based on extrapolation of past trends into the future. Recent concern about declining populations of salmonids in Washington State has fostered efforts to change past trends. The State of Washington is actively pursuing recovery of salmonid stocks via a comprehensive program of habitat protection, education, policy analysis and modification, and public outreach. The efforts of Washington State, along with initiatives by private and local entities, may help reverse some of the trends discussed above.

I. Conclusion

The ESA listings of a variety of fish and wildlife species in the State of Washington have been based, in part, on the additive impacts of growth, development, and other human activities. At this point, the trends discussed above indicate that future impacts will progress similarly, leading to additional adverse impacts on all fish and wildlife and their habitats. Changes to past development practices provide hope that past trends are not predictive of the future circumstances.

VII. Implementation Procedures

For those activities addressed in this programmatic consultation, specific implementation procedures must be followed by the Corps in order for the activity to be authorized under the programmatic consultation.

These procedures include:

- ◆ Individual project review
- ◆ Compliance and enforcement procedures, and
- ◆ Programmatic Tracking and Reporting

A. Individual Project Review

In order to confirm that an activity falls within the parameters of the programmatic consultation, the applicant will complete and submit the “Specific Project Information Form (SPIF) for ESA Programmatic Consultation on Activities in the Lower Columbia River” (See Table 7: Specific Project Information Form) including vicinity map and drawings prior to construction.



Table 7 – Specific Project Information Form (SPIF)

Version: March 18, 2002

**U.S. Army Corps of Engineers
Seattle District, Regulatory Branch**

SPECIFIC PROJECT INFORMATION FORM (SPIF) FOR ESA PROGRAMMATIC ACTIVITIES ON THE LOWER COLUMBIA RIVER

NMFS Programmatic Reference Number: _____

1. **Date:** _____ **Corps Reference No.** _____

2. **Applicant:** **Corps Project Manager.** _____
Name: _____
Address: _____
City: _____ State: WA Zip: 98

3. **Agent:**
Name: _____
Address: _____
City: _____ State: WA Zip: 98

4. **Location(s) of Activity:**
Section: _____ Township: _____ Range: _____
Latitude: _____ Longitude: _____ HUC: _____
Waterbody: _____ County: _____

5. **Listed or Proposed Fish Species present:** _____

6. **Programmatic Activity Proposed:**

7. **Timing:** Time of year for construction: _____ to _____

8. **Department of the Army authorization (NWP, LOP or IP) proposed to be used:** _____

9. **Vicinity Map and Drawings** – Vicinity Map and Drawings must be submitted.

Corps Review

In Seattle District, Regulatory Branch, there are two primary application reviewers – the project manager and the Environmental Analyst. The project manager, a generalist in background, oversees the application review process, coordinating with the applicant and state and federal agencies as necessary. The Environmental Analyst – a technical expert – reviews the permit decisions, jurisdictional determinations, and biological assessments for scientific accuracy and consistency with Corps regulations. With workload separated geographically, the Environmental Analysts work with project managers in a team leader role and reviews the project manager's assessments and evaluations.

The Corps project manager and Environmental Analyst will review the activity and SPIF to determine the appropriate permitting procedure (Nationwide Permit, Letter of Permission or Individual Permit) and if the activity may be authorized under the programmatic consultation.

The project manager will review the *Conservation Measures* for each activity as outlined in the programmatic consultation. When the conservation measures require a written authorization from NMFS, the project manager will complete the "ESA Programmatic Notification to NMFS – Programmatic Consultation for Lower Columbia River" (See Table 8), providing a short summary sentence for the notification and attaching the SPIF, drawings, and any additional documentation as required by the conservation measures. This complete package is referred to as the "Individual Programmatic Biological Assessment" (IPBA). After review by the Environmental Analyst, the project manager will either fax or mail the IPBA to NMFS for approval.

While the IPBA is with the Services for review, the Corps project manager may proceed with the application review process as defined in Corps regulations but must not finalize the permit decision until individual programmatic consultation procedures have been completed. NMFS Review

NMFS will respond to the Corps within 30 days with (1) a list of additional information needed to complete the notification, (2) written approval of the IPBA, or (3) a date when initial review of the IPBA is anticipated.

If NMFS does not approve of the IPBA, the activity must either be adjusted to fit within the parameters of the existing programmatic consultation conservation measures or must proceed with individual consultation measures as outlined in Section 7 of the ESA. NMFS may send an electronic approval or statement declining approval of the IPBA if the e-mail is from the NMFS Team Leader. Requests for additional information or notification of delay in review may be sent to the Corps electronically via the NMFS Programmatic Coordinator's or Staff Reviewer's e-mail account.



Table 8 – Notification to NMFS

Version: March 18, 2002

**U.S. Army Corps of Engineers
Seattle District, Regulatory Branch**

**NOTIFICATION TO NMFS - PROGRAMMATIC CONSULTATION
FOR ACTIVITIES IN THE LOWER COLUMBIA RIVER**

TO: NMFS Programmatic Coordinator

FROM: Corps of Engineers, Seattle District, Regulatory Branch, (206) 764-____

Project Manager: _____

Date: _____ Request for Response: _____
(30 calendar days)

Applicant: _____ Corps Reference No: _____

Waterway: _____

Proposed authorization (NWP#, RGP#, LOP, IP): _____

We request written approval that the following information adequately addresses requirements in the "Programmatic Consultation for Activities in the Lower Columbia River". dated March 18, 2002, and approved by your agency on *****. Enclosed is the Specific Project Information Form (SPIF) including drawings and supporting documentation.

Programmatic Notificiation Requirement(s)

If the Corps notifies NMFS per these procedures, the Corps will not proceed with permit issuance until NMFS has either provided written approval of the IPBA or, if approval is not given, individual Section 7 consultation has been completed with NMFS.

B. Compliance and Enforcement

When an activity is approved under the programmatic consultation and authorized by a Department of the Army permit, the Corps and NMFS will ensure that all conditions of the completed programmatic consultation including the reasonable and prudent measures (RPM)s and terms and conditions of the Programmatic Biological Opinion, are implemented in their entirety.

To ensure compliance with the programmatic consultation conditions, the Corps will conduct random site evaluations of activities authorized under the programmatic consultation. Through notification by anonymous complainants, the Corps may specifically target an individual activity to determine if it is in compliance with the conditions as authorized under the programmatic consultation. If the Corps determines that a permittee is in violation of the programmatic consultation conditions or has deviated from the authorization, the Corps will proceed with an enforcement action against the permittee per Corps enforcement regulations and in coordination with NMFS. In some instances, the Corps, in coordination with NMFS, may cite the contractor with a violation, if the contractor is repeatedly involved in deviations of permit conditions or violations. Enforcement actions may include, but are not limited to, revisions to the activity construction and/or design, implementation of mitigation measures to compensate for unacceptable adverse impacts, revocation of the Department of the Army permit, removal of the constructed activity, and/or fines.

If a permittee is in violation of the programmatic consultation conditions or has caused unauthorized take of a listed species, NMFS may implement enforcement actions against the permittee as per their regulations and procedures.

C. Programmatic Tracking and Reporting:

On an annual basis, the Corps will submit regular tracking reports to NMFS outlining the use of the programmatic consultation.

The tracking reports shall include:

- Activities Authorized:
 - List of all the activities authorized under the programmatic consultation showing Corps reference number, permittee's name, date of approval, waterway, and permitting procedure used (NWP, RGP, LOP, IP).
 - List of permits authorized under the programmatic consultation by activity (i.e. streambank protection, utility lines, etc.).

- Compliance and Enforcement Actions:
 - Discussion of which projects were modified from what was originally authorized and how.
 - Discussion of any enforcement actions taken on projects authorized by the programmatic consultation and how they were resolved.

- Activities not Authorized:
 - Discussion of the activities that did not meet the programmatic consultation conditions and why.

- Proposed Programmatic Consultation Revisions and/or Modifications:
 - Recommendation as to whether the programmatic should be revised to include additional activities, exclude previously authorized activities, or revise or exclude any conditions of the programmatic consultation.

The Corps and NMFS will meet at least annually by December 31 of each year to review the tracking reports and determine if revisions or addendums to the programmatic consultation are necessary. If revisions or addendums are proposed, the Corps will reinitiate consultation with NMFS to approve the revisions or addendums to the programmatic consultation. NMFS will respond in writing to any changes made to the programmatic consultation.

Revisions and Addendums to Conservation Measures: The Corps and the NMFS will specifically discuss exclusions, alterations, modifications, and/or additions to the programmatic consultation conservation measures made during the site specific project review. If activities are consistently unable to meet certain programmatic consultation conditions but are receiving approval from NMFS through individual Section 7 consultations, serious consideration will be given to revising the programmatic consultation accordingly.

Addendums: The Corps may propose addendums to the programmatic consultation for any activities previously unidentified or not covered under the programmatic consultation as long as appropriate biological assessments are provided for those activities. The Corps will not consider these activities to be included in the approved programmatic consultation until NMFS has provided addendum Programmatic Biological Opinions addressing those activities.

Rescinding the Programmatic Consultation: At any time in the life of the programmatic consultation, the Corps or NMFS has the right to rescind the programmatic consultation process. However, the Corps and NMFS will first meet to discuss any decisions to rescind the programmatic consultation or portions thereof in an attempt to resolve issues or conflicts. If the issues or conflicts are not resolved by the Programmatic Coordinators for the Corps and NMFS, the issue may be elevated for discussion by the Chief of the Corps Regulatory Branch and the Chief of the NMFS Washington State Habitat Branch. If the issues are still unresolved, the District Engineer of the Corps and the Chief of the NMFS Washington State Habitat Branch shall meet. If the issue is still irresolvable, a decision to rescind the programmatic consultation must be in writing and signed by the Corps District Engineer or the NMFS Washington State Habitat Branch.

VII. Essential Fish Habitat

Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires Federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH).

The objective of this EFH assessment is to determine whether or not the proposed action(s) “may adversely affect” designated EFH for relevant commercially, federally-managed fisheries species within the proposed action area. It also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the proposed action.

Location

The proposed activities may occur in the mainstem Lower Columbia River downstream of McNary Dam including Baker Bay in Washington State.

Description of Activities

The activities covered by this assessment have been described in detail earlier in Section III of this document – Activity Descriptions and Conservation Measures.

Potential Adverse Effects of Proposed Activities

EFH for ground fish (Table 9) and salmonids (Table 10) would be affected by activities proposed under this programmatic consultation. EFH affects analysis of these activities is included by reference in the “Programmatic Biological Opinion – 15 Categories of Activities Requiring Department of the Army Permits” prepared by NMFS Northwest Region, dated March 21, 2002. (Appendix B)

Table 9. Ground fish species with designated EFH and the life history stages that may occur near activities in the Lower Columbia River (PFMC, 1998a).

Ground Fish Species	Adults	Spawning/ Mating	Large Juvenile	Small Juvenile	Larvae	Eggs/ Paturition
Leopard Shark	X	X	N/A	X	N/A	X
Soupin Shark	X	X	N/A	X	N/A	X
Spiny Dogfish	X		X	X	N/A	X
California Skate	X	X	N/A	X	N/A	X
Ratfish	X	X	N/A	X	N/A	
Lingcod	X	X	X	X	X	X
Cabezon	X	X	X	X	X	X
Kelp Greenling	X	X	X	X	X	X
Pacific Cod	X	X	N/A	X	X	X
Pacific Whiting (Hake)	X	X	N/A	X	X	X
Sablefish				X		
Jack Mackerel	X		N/A		X	
Black Rockfish	X			X		
Bocaccio				X	X	
Brown Rockfish	X	X	N/A	X		X
Calico Rockfish	X		N/A	X		
California Scorpionfish						X
Copper Rockfish	X		X	X		X
Kelp Rockfish				X		
Quillback Rockfish	X		X	X	X	X
English Sole	X	X	N/A	X	X	X
Pacific Sanddab			N/A	X	X	X
Rex Sole	X		N/A			
Starry Flounder	X	X	N/A	X	X	X

N/A - Not Applicable. Either the species does not have a particular life stage in its life history, or when EFH of juveniles is not identified separately for small juvenile and large juvenile stages. For many species, habitats occupied by juveniles differ substantially, depending on the size (or age) of the fish.

Frequently, small juveniles are pelagic and large juveniles live on or near the bottom; these life stages are identified separately in the table when sufficient

information is available to do so. When juvenile habitats do not differ so substantially or when information is insufficient to identify differences, EFH is identified only for the juvenile stage (small and large juveniles combined), and N/A is listed in the column for the large juvenile stage in the table (PFMC, 1998a).

Table 10. Salmonid species with designated EFH and the life history stages that may occur near activities in the Lower Columbia River

Salmon	Egg	Larvae	Young Juvenile	Juvenile	Adult	Spawning
Chinook salmon	X	X	X	X	X	X
Coho salmon	X	X	X	X	X	X
Pink salmon	X	X	X	X	X	X

Coastal Pelagic EFH

Activities proposed under this programmatic consultation are likely to occur in or along the edges of freshwater or estuarine waters in the mainstem Lower Columbia River downstream of McNary Dam, including Baker Bay. Coastal pelagic species occur in offshore marine and estuarine waters within Washington State. A few of these activities, such as maintenance dredging, aids to navigation and mooring buoys, are likely to occur in coastal pelagic species habitat. These activities, especially maintenance dredging, may result in temporary short-term affects to the coastal pelagic species habitat. We have determined that the proposed activities are likely to adversely affect EFH for coastal pelagic species.

Salmon EFH

All life history stages of pink, coho, and chinook salmon may be affected by the proposed activities because the projects may take place in both freshwater and estuarine waterbodies in the mainstem Lower Columbia River downstream of McNary dam, including Baker Bay. These activities are likely to a cause both short and long term impacts to pacific salmon designated EFH. Streambank protection activities are likely to have the greatest impact on salmon EFH of any of the activities proposed. We have determined that the proposed activities are likely to adversely affect EFH for pacific salmon.

Ground Fish EFH

Work in estuaries associated with streambank protection, maintenance dredging or tide gate removal has the potential to affect ground fish EFH. Mud flats, high salt marsh, and salt marsh creeks provide productive shallow water habitat for

epibenthic fishes and decapods (Sogard and Able, 1991). Coarse sediment tidal flats are productive benthic infauna areas (Simenstad *et al.*, 1990).

Construction activities associated with streambank protection, removal tide gates or regular maintenance dredging operations may temporarily degrade ground fish EFH by introducing sediment or restricting access to habitat. Vegetation removal may alter food web dynamics in the vicinity of the work. De-watering and fish removal may kill or injure individual fish. There will also be a risk of petroleum spills from heavy equipment working in the project area. We have determined that the proposed activities are likely to adversely affect designated EFH for groundfish.

EFH Conservation Measures

The conservation measures proposed in Section III this programmatic consultation to protect federally listed and proposed species will also help avoid and minimize impacts of the proposed activities on designated EFH for coastal pelagic species, pacific salmon and ground fish EFH.

Conclusion

As described in above, the proposed activities may result in short-term adverse impacts to a variety of salmon and ground fish EFH parameters. In the long-term, the proposed activities are expected to enhance the extent and functions of salmon and groundfish EFH. We anticipate that implementation of the referenced conservation measures will avoid, minimize or otherwise offset potential adverse effects to EFH in the proposed action area.