

**An Amendment to the Union Slough 1135 Restoration Project
Final Project Modification Report/Final Environmental Assessment and
Finding of No Significant Impact
dated February 2003**

**Draft Environmental Assessment
City of Everett
Snohomish County, Washington**

May 2011



**US Army Corps
of Engineers®**
Seattle District

The Bridge Removal Portion of the Union Slough 1135 Restoration Project
City of Everett
Snohomish County, Washington
May 2011

Draft Amended Environmental Assessment

Responsible Agencies: The Seattle District U.S. Army Corps of Engineers (Corps) and the City of Everett are the responsible agencies for this proposed project.

Summary: The proposed action is described in detail in the attached amended Environmental Assessment to the original Union Slough 1135 Restoration Project Everett, Washington Final Project Modification Report/Final Environmental Assessment and Finding of No Significant Impact dated February 2003. The Union Slough Restoration project was developed under the authority of Section 1135 of the Water Resources Development Act of 1986 (Public Law 99-662), as amended, and the bridge removal action is in accordance with EC 1105-2-214, Project Modifications for Improvement of the Environment and Aquatic Ecosystem Restoration (dated September 1997). The goal of the Union Slough Restoration Project was to create and restore critical salmon rearing habitat, while maintaining flood protection to the City's water pollution control facility. The existing levee was breached along Union Slough at three locations, borrow and agricultural ditches were filled, and several short drainage channels were excavated. Pedestrian bridges were constructed at each of the three 180-foot breaches. The breaches were designed to allow the restoration site to fill and drain with the tides twice daily. Short channels were excavated between the low areas and the breaches to facilitate drainage during low tides. The breach of the levee resulted in unexpected undercutting and scour of the pedestrian bridges from the tidal flows. Because of construction changes to the design, the elevations of the breach areas were set at an elevation that did not allow for adequate site drainage. This change has affected the environmental outputs of the project. Environmental outputs are not reaching expected levels.

This proposed revision to the project entails removing the bridges, due to their unsafe nature, and recontouring the sediments to achieve full tidal exchange and drainage as the tide flood and ebbs. The bridge removals will consist of relocating the pedestrian trail to the west along the setback levee, removal of the pedestrian bridges, removal of remnant levee material along the slough side of the breaches, and creating additional low flow channels within the restoration site to facilitate additional drainage during tide cycles. This proposed revision repairs water movement within the newly opened areas designed to provide salmon rearing habitat.

Potential impacts of the proposed work are described in this document. Impacts will generally be highly localized in nature, short in duration, and minor in scope. Impacts should not be significant either individually or cumulatively.

Please send requests for additional information to: Mr. Michael Scuderi, Environmental Resources Branch, U.S. Army Corps of Engineers, P.O. Box 3755, Seattle, Washington 98124-3755, 206-764-7205, Michael.R.Scuderi@usace.army.mil.

DRAFT

Table of Contents

1	Introduction	1
2	Background.....	1
2.1	Project Location	1
2.2	Project Authority	2
2.3	Project History.....	2
2.4	Purpose and Need.....	3
2.5	Project Description.....	4
2.6	Schedule	6
3	Alternatives.....	6
3.1	No Action	6
3.2	Preferred Alternative - Remove all Three Bridges.....	7
3.3	Remove North Bridge only	7
4	Existing Environment	7
4.1	Geology and Soils	8
4.2	Water Quality and Groundwater	9
4.3	Air Quality and Noise	10
4.4	Biological Resources.....	10
4.4.1	Vegetation	10
4.4.2	Fish.....	10
4.4.3	Wildlife	12
4.4.4	Threatened and Endangered Species	12
4.5	Cultural Resources	12
4.6	Recreational Resources	12
4.7	Socioeconomics.....	13
5	Effects of the Alternatives	13
5.1	Geology and Soils	13
5.1.1	No Action.....	13
5.1.2	Preferred Alternative.....	13
5.1.3	Remove North Bridge Only	13

5.2	Water Quality and Groundwater	14
5.2.1	No Action.....	14
5.2.2	Preferred Alternative.....	14
5.2.3	Remove North Bridge Only	15
5.3	Air Quality and Noise	15
5.3.1	No Action.....	15
5.3.2	Preferred Alternative.....	15
5.3.3	Remove North Bridge Only	16
5.4	Biological Resources.....	16
5.4.1	No Action.....	16
5.4.2	Preferred Alternative.....	16
5.4.3	Remove North Bridge Only	16
5.5	Cultural Resources	17
5.5.1	No Action.....	17
5.5.2	Preferred Alternative.....	17
5.5.3	Remove North Bridge Only	17
5.6	Recreational Resources	17
5.6.1	No Action.....	17
5.6.2	Preferred Alternative.....	17
5.6.3	Remove North Bridge Only	17
5.7	Socioeconomics.....	18
5.7.1	No Action.....	18
5.7.2	Preferred Alternative.....	18
5.7.3	Remove North Bridge Only	18
6	Unavoidable Adverse Effects	18
7	Irreversible and Irretrievable Commitments of Resources.....	18
8	Cumulative Effects	18
9	Environmental Compliance and Coordination	19
10	Conclusions	20
11	References	20

Table of Figures

Figure 1. Project Location

Figure 2. Union Slough Site View

DRAFT

DRAFT AMENDED ENVIRONMENTAL ASSESSMENT (EA)

Union Slough Bridge Removal Project

1 Introduction

The Union Slough 1135 Restoration Bridge Removal Project is located on Smith Island, adjacent to Union Slough part of the Snohomish River and is located in the City of Everett and unincorporated Snohomish County, Washington. The bridges were initially constructed as part of a Section 1135 Restoration project (south half) and an ancillary advanced mitigation site for the City of Everett future Water Pollution Control Facility expansion and dike improvements (north half). This EA is an amendment to the original Union Slough 1135 Restoration Project Everett, Washington Final Project Modification Report/Final Environmental Assessment and Finding of No Significant Impact dated February 2003. The north and the south halves of the restoration area are interconnected hydraulically and together make up the Union Slough Restoration Project which was completed in 2007.

Since construction, substantial scour underneath the bridge footings and structural damage to the bridges has occurred. This additional work proposes to remove the bridges and remnant levee material and recontour the sediments to improve tidal exchange with Union Slough. Because of construction changes to the design, the elevations of the breach areas were set too high to allow for adequate site drainage. The lowest part of each breach, the low-flow channel, was designed to be at elevation 0.0 feet (all elevations are NAVD 88) but currently has an elevation of approximately two feet. In addition, the south and central bridge elevations are at approximately two feet compared to the design elevation of 0.0 feet for the low flow channel. This change has affected the environmental outputs of the project and as a result, environmental outputs are not reaching expected levels.

In accordance with the National Environmental Policy Act (NEPA), this document examines the potential impacts of the proposed revisions to the original design, which includes bridge removal and sediment recontouring to reestablish full tidal exchange and does not address impacts previously discussed in the original EA. This amended EA discusses the bridge removals, removal of remnant levee materials, construction of additional low flow channels, and discusses potential environmental impacts to complete the Union Slough Restoration Project. This document incorporates by reference the analysis and recommendations found in the Union Slough 1135 Restoration Project Everett, Washington Final Project Modification Report/Final Environmental Assessment and Finding of No Significant Impact dated February 2003.

2 Background

2.1 Project Location

The Union Slough Bridge Removal Project is located on Smith Island, adjacent to Union Slough on the Snohomish River and is located in the City of Everett and unincorporated Snohomish County, Washington (Figure 1). The project site is in Section 15, 16, and 21, Township 29 North, Range 5 East and is directly east of the City of Everett's Water Pollution Control Facility.

Smith Island is located in the Snohomish River estuary, east of downtown Everett and Interstate 5. The City of Everett's Water Pollution Control Facility, which treats wastewater from the City of Everett and southwest Snohomish County, is located immediately west of the project site. The total project area is approximately 93 acres. The site is divided into two hydraulically connected contiguous areas that define project responsibility and cost sharing contributions between the Corps and the City of Everett (Figure 2). The site is protected from flooding by a dike system bordering the river and slough.

2.2 Project Authority

The City of Everett, requested Federal assistance in 1998 to restore 93 acres of land on Smith Island alongside Union Slough that were adversely affected by the Everett Harbor Snohomish River Navigation project the Corps completed in 1963. The Union Slough Restoration project was developed under the authority of Section 1135 of the Water Resources Development Act of 1986 (Public Law 99-662), as amended, and the bridge removal project is in accordance with EC 1105-2-214, Project Modifications for Improvement of the Environment and Aquatic Ecosystem Restoration (dated September 1997). The goal of the Union Slough Restoration Project was to create and restore critical off channel salmon rearing habitat, while maintaining flood protection to the City's water pollution control facility. The Union Slough Restoration Project included breaching the Union Slough levee at three locations to create and restore critical salmon rearing habitat. A setback levee was constructed along the City's water pollution control facility to maintain flood protection.

The Corps approved the Final Project Modification Report/Final Environmental Assessment and Finding of No Significant Impact for the Union Slough 1135 Restoration Project in February 2003. That report included a plan for the Union Slough project which involved the 93-acre dike-setback site, which was intended to provide 58 acres of mitigation credit (37 acres remain after the original project construction) for the City and 35 acres of ecosystem restoration for the Federal cost-shared 1135 project. These measures were within the Section 1135 Federal funding limit, expected to achieve the environmental benefits outlined in the 2003 Project Modification Report/Final EA, and have non-Federal sponsor support. However, as noted below, additional work is required including removal of several bridges. This revised design does not require reformulation and will not be a National Ecosystem Restoration formulation because the environmental outputs are not expected to change from the originally formulated outputs.

2.3 Project History

The initial restoration project was designed to reestablish intertidal wetlands with full tidal interaction and salmonid rearing habitat on a City of Everett Public Works Department site by reconnecting the area with Union Slough. It included a 6,900 LF setback levee, in the landward direction, in order to provide a 10 year + 2 foot level of flood protection along the City's Water Pollution Control Facility to maintain the existing level of flood protection. The setback levee stretched from Union Slough directly west to the northeast corner of the Water Pollution Control Facility ponds, south along the entire pond, and directly east back to Union Slough.

The existing levee was breached along Union Slough in three locations, borrow and agricultural ditches were filled, and several drainage channels were excavated between the breach locations and the newly created habitat areas to facilitate tidal flows in 2007. The breaches were designed to allow the restoration sites to fill and drain with the tides twice daily. Tidal connections in the site have not established as planned, since it does not drain to the extent anticipated to create an intertidal marsh and mudflat (designed to be less than 5 percent water at low tide). Pedestrian bridges were constructed at each of the three 180-foot breaches to maintain public access. The total effective opening length under the bridges at each breach is 168 feet (part of the opening is taken up by the piers) and the remnant levee material further reduces the openings to 15 to 20 percent of the original design. Changes to the original bridge foundation design, the elevations of the breaches, and limited low-flow channels appear to be the primary cause of the inadequate drainage. Additionally, significant portions of the remnant dike remain between each breach and Union Slough, reducing the effectiveness of each breach opening. Several of the spread footings for the three 180 foot bridges have experienced undercutting caused by scour from the tidal flows. Efforts were made in 2008 to repair damaged footings and reduce the effects of scouring, however, the repairs were ineffective and the City of Everett's consultant ICF Jones & Stokes (in a report dated 2009) concluded that bridge removal would cost less than replacement of the bridges.

Since 2007 the project has not achieved the expected ecosystem restoration benefits. This is largely due to a lower than expected hydraulic capacity through the bridge openings affecting the tidally-influenced drainage of site. The site was designed to fill and drain in concert with Union Slough with five percent or less of the total surface area remaining inundated at low tide. Based on an average ground elevation of 4.0 feet NAVD88, the design intent corresponds to a hydroperiod wherein the entire site would be drained for approximately 60 percent of the time. Extensive channel formation within the project area has not occurred as a result of the reduced hydraulic capacity. Furthermore, the remnant dike material on the slough side of the bridges restricts flows and has resulted in lower than expected drainage rates.

2.4 Purpose and Need

The need for the recommended revisions to the project is the result of existing conditions at the Union Slough site that do not provide the expected ecosystem restoration benefits described in the 2003 Project Modification Report/Environmental Assessment as well as the need to address the scour damage that is occurring to the bridge foundations. At the north bridge, scour has undermined the riprap (placed in 2008 for stabilization of the initial scour) causing it to move away from the footings. At the south bridge over 50 percent of the footings adjacent to the low flow channel are being undermined (ICF Jones & Stokes 2009). These revisions will improve water movement within the newly opened areas designed to provide salmon rearing habitat. All three bridge structures have scouring problems at the foundation. The scouring problem is most pronounced at the north bridge as evidenced by undulations in the bridge deck. The City of Everett commissioned a study by ICF Jones & Stokes to examine alternatives for repairing the

bridges and enhancement of drainage (ICF Jones & Stokes 2009a). The study concluded that it would be less expensive to remove the bridges than to replace the foundations.

While tidal prism has been restored to the entire 93-acre site, tidal dendritic channels in the site have not established as planned. While the timing of maximum tidal inundation in the mitigation site matches that in Union Slough, drainage rates slow as the tide recedes. The majority of the site remains inundated with one to two feet of water and never achieves equivalent low tide conditions found in Union Slough. The sites flood as designed during high tide but low tide elevations within the sites are higher than those in Union Slough, keeping the water from adequately draining during ebb flow tides. At low tide 67 percent of the City of Everett site and 57 percent of the Corps site remain inundated at low tide (ICF Jones & Stokes 2009a). The site is not functioning as intended, since it does not drain to the extent anticipated (intended that less than five percent of the area would be inundated at low tide) and needed for fostering the formation of an intertidal marsh and mudflat throughout the site.

The majority of each breach, as constructed, has an elevation that is approximately two feet higher than the original design of the low flow channel. The lowest portions of the breaches at both the south and central bridges appear to have an elevation of between two to three feet which is higher than the Corps 90% design elevation (ICF Jones & Stokes 2009b). Construction changes to the original bridge foundation design, the elevations of the breaches, and low-flow channels appear to be the primary cause of the inadequate drainage. Additionally, significant portions of the dike remain between each breach and Union Slough, reducing the effectiveness of each breach opening (effective opening of each breach is only 15 to 20 percent of the bridge length).

2.5 Project Description

Available construction time and budget will ultimately determine the extent of revisions to the project. Because of elevation requirements to open up the breaches for more complete drainage and the predicted tide elevations, it will be necessary to either isolate the work areas or operate within the breach areas during wet conditions. Discussions with National Marine Fisheries Service, U.S. Fish & Wildlife Service, Washington Department of Fish and Wildlife, and Washington Department of Ecology determined that isolation of the entire restoration site was not preferred.

It is anticipated that the proposed revisions to the project could include the use of floating silt curtains along the slough and localized isolation techniques to allow working in a wet environment. Temporary bypass roads and turnarounds are anticipated to be constructed near the south and central bridges within the City's jurisdictional boundaries. The bridge removal element at the north bridge may largely take place from land platforms outside critical areas. However, debris removal and foundation and geogrid excavations will require work within critical areas.

Major Elements

- The trail relocation will include placement of an asphalt pavement path along the top of the setback levee approximately 750 feet to the west of the existing trail. A six foot tall chain-link fence was constructed to provide security for the water pollution control facility.
- Bridge removal will include the demolition and removal of the concrete arches that make up the bridge spans. The footings and three-feet of alternating geogrid and gravel foundation material will be removed. Demolition materials will be disposed of at an approved off-site location.
- Temporary access road (with twin culverts) construction may be utilized to provide better through-access for hauling bridge debris and waste materials. These features would occur at the south and central bridge locations. Access roads would require the temporary placement of approximately 1,000 CY of spalls and surfacing material per breach.
- Remnant levee material occurs on the slough side of the levee (effective opening of each breach is only 15 to 20 percent of the bridge length) and will include removal of material along the slough side of each breach. This will allow free drainage through the full span of the breach. The City of Everett will provide an approved site for sediment disposal.
- The estimated earthwork for the geogrid and remnant levee material removal is approximately 4,500 CY per breach plus removal of the emergency rip rap material placed on the north bridge footing.
- Internal channel construction will include the excavation of low flow channels at specific locations to facilitate better drainage of internal areas. These channels would be approximately eight feet wide and one to three feet deep. Materials excavated to create the channels will be side cast. Once tidal exchange has been restored, sedimentation will occur in the marsh area as occurs in other tidally influenced areas of the estuary. Channel formation in the site should increase due to the enhanced tidal exchange.

The Corps anticipates utilizing a performance-based contract which will allow the contractor to determine means and methods within established performance criteria. The Corps will develop a basic plan and sequence and establish water quality criteria for the contractor based on the water quality permits obtained for the project. The selected contractor will determine which equipment and techniques would best allow them to complete the project within the prescribed time-line while meeting the specific performance criteria.

It is anticipated that the revisions to the project will include the use of floating silt curtains along Union Slough with localized isolation techniques to meet water quality conditions during in-water work. Temporary bypass roads and turnarounds may be constructed near the south and central bridges within the City's jurisdictional boundaries. All work on the northern bridge would be accessed from existing levees and occur on the geogrid bridge foundation.

The bridge removal element at the north bridge may largely take place from land platforms outside the critical areas. However, debris removal and foundation and geogrid excavations will require work within the critical areas. Similarly, some portions of the remnant levee material may be removed from landward platforms but grading to finished elevations will require work within critical areas. All internal channel construction will require work within the critical areas.

The following construction activities would occur at the project site for each of the three bridge removals dependent on funding. The anticipated construction sequence is listed below:

- Install floating silt curtain in Union Slough
- Cut back existing levee at each end of pedestrian bridges to a 12 percent grade
- Install temporary roads and culverts as needed
- Demolish or dismantle bridge and remove
- Remove remnant levee material
- Remove geogrid fabric
- Cut finish slope to specified grade toward Union Slough
- Internal low flow channel construction
- Stabilize construction site and remove erosion control structures

2.6 Schedule

Subject to the Corps plan preparation, review schedule, and agency approvals, it is anticipated that the revisions to the project would begin during the 2011 fish window of 15 July through 31 October. The intent is to complete the work within a single season; however, it may be necessary for the contractor to come back for the 2012 fish window if all of the bridge removal work cannot be completed within the 2011 fish window.

3 Alternatives

Three alternatives have been developed for the NEPA analysis. The No Action Alternative is used for baseline comparison. Fixing the bridges was removed from consideration due to cost.

3.1 No Action

Under the “No Action Alternative,” bridge removals, remnant levee material removal, and additional low flow channel construction would not take place. No additional work would be conducted on the pedestrian trail on top of the setback levee. Damage to existing bridges and geogrid foundations would continue and the restoration conditions, over time, would not meet the project goals. The bridges could gradually fail and potentially collapse into the channel blocking flows and trapping fish diminishing the value of intertidal rearing habitat as a result. It is anticipated that bridge stability would be monitored and corrective action would be taken if necessary to stabilize the structure before it totally failed. This action might result in further impediment of flow through the breach areas, further reducing ecological functioning. The “No

Action Alternative” would not meet the need and purpose of the project, the local sponsors, or the environment.

3.2 Preferred Alternative - Remove all Three Bridges

The recommended design consists of removal of all three bridges (including geogrid foundation) that now span the three dike breaches, pedestrian trail relocation, remove remnant levee material riverward of the breaches to increase hydraulic capacity, recontour the breach areas to better achieve the full tidal prism, and create additional tidal channels in the site to increase hydraulic connectivity. The majority of each breach, as constructed, has an elevation that is approximately two feet higher than the original design. Work would occur during the fish window (15 July through 31 October) at low tide to reduce impacts to critical areas. All work would occur within the same footprint as that for the bridge installations. Temporary bypass roads and turnarounds may be constructed to minimize construction in wet conditions. Bridge removal would include demolition and removal of the concrete arches of the bridge spans, the footings and the three-feet of alternating geogrid and gravel foundation material. Other components of the preferred alternative include: removal of the remnant levee material along the slough side of the breaches, creating additional interior low flow channels (~8 feet wide by 3 feet deep), and remove geotextile material from the channel entrance. The site would be restored to a diverse mixture of intertidal marsh, mudflat, and open water areas, providing off-channel self-sustaining rearing habitat for fish and wildlife. With the enhancement of the tidal prism, additional tributary channels may ultimately form over time in a dendritic pattern within portions of the sites with adequate tidal flow.

3.3 Remove North Bridge only

Remnant levee material removal and construction of low flow channels would occur at the north bridge location. There would be no removal of the remnant levee material or construction of low flow channels outside the north bridge location. Since much of the site is lower than the elevation of the breaches, many sections do not adequately drain during the ebb tide. Channel elevations at the central and south breaches would not change. Enhancement of tidal flushing would occur primarily on the northern portion of the site. Should available funding only cover the removal of the north bridge in its entirety, the central and south bridges could be stabilized with material along the breaches and pedestrian access rerouted. However, adequate stabilization of these structures would further impair drainage of the site.

4 Existing Environment

Smith and Spencer islands, in north Everett, were annexed into the City in 1983 and are zoned for heavy industry. Existing land use consists of diked freshwater and estuarine intertidal wetlands and pedestrian paths. The main site features in the project area are levees and a tidally flooded lowland area. The lowland area is surrounded on four sides by levees - three active (north, south, and west sides) and one breached (east side). The north and south levees separate

the project area from adjacent open undeveloped fields or wetlands. The western levee separates the project area from the water pollution control facility lagoons.

The site, adjacent to Union Slough, has a remnant levee that runs along the eastern border of the site with three 180-foot-wide breaches spanned by pedestrian bridges. This remnant material has reduced the effective opening of each breach to approximately 15 to 20 percent of the bridge length. The bridge foundations are undercut and geotextile fabric is exposed in the breached channels. Various shallow channels have been cut to accommodate drainage of tidal water, but large areas of standing water remain within the site at low tide. A review of LIDAR data indicates most of the lowland elevation is above +5 feet NAVD88 where as Union Slough is -1 to -3 feet NAVD88 (Battelle 2010).

Union Slough is influenced by diurnal tidal fluctuations of up to 13 feet. The channel is up to 100 feet wide with gentle side slopes. The project area ranges in elevation from ten feet to two feet. The restoration area is poorly drained and has numerous ponds and water filled drainage channels. At low tide 67 percent of the City of Everett site and 57 percent of the Corps site remain inundated at low tide. In 2008, areas of open standing water (greater than 3.5 feet and unvegetated) comprised approximately 6.4 acres of the City of Everett site and increased to approximately 18.5 acres in 2009 (ICF Jones & Stokes 2009). This reflected the effect of continued inundation at low tide and the die off of the site's pre-breach vegetation community.

Of the three dominant vegetation communities present prior to construction of the breaches, only reed canarygrass areas remain. Cattail and soft rush areas have transitioned to open water unvegetated areas that do not drain at low tide. The remaining reed canarygrass areas are decreasing in density and vigor, and are characterized by hummocks of grass interspersed with narrow channels of water. Native intertidal marsh species are beginning to colonize these hummocks, but their presence is currently limited to portions of the site which drain completely to expose the sediments at low tide.

4.1 Geology and Soils

The most recent glaciation in the Everett/Marysville area, termed the Vashon Stade of Fraser Glaciation, ended about 16,000 years ago in the central portion of the Puget Lowland. Since that time, the ground surface has been significantly modified by erosion and mass movement, and the Snohomish River delta has been filled with at least a few hundred feet of Holocene sediments — glacial and nonglacial soil eroded from the uplands. River discharge or sediment supply changed at some time to cause a coarsening of the alluvial material.

A 40- to 50-foot-thick stratum of sandy alluvium is overlain by a 10- to 20-foot-thick layer of younger, estuarine, fine sand; silt; and clay with organics. The Snohomish River delta includes a substantial thickness of normally consolidated, nonglacial soil deposits. Hard and very dense glacial deposits form the uplands to the east and west in this reach of the river valley, but none were encountered in the initial explorations for the restoration project. No bedrock was encountered in any of the borings.

Soils on the area are classified as predominately Puget silty clay loam with isolated areas of Mukilteo muck, Snohomish silt loam, and Terric Medisaprists by the Natural Resources Conservation Service (<http://soils.usda.gov/>). Upper subsurface materials on the site consist of very soft to soft silty clay, silt, and organic silt with peat layers to depth of 15 to 25 feet below the surface and a pH of 5.0. The silty soils are underlain by fine sand with silty sand, silty layers, and scattered peat lenses. Dense sand and gravel occurs at depths of approximately 125 feet.

According to the National Resource Conservation Services soil survey classifications, Puget silty clay loam is a very deep artificially drained soil formed in alluvium. Permeability is slow and susceptibility to erosion is low to moderate for all four soil units (types) occurring on the site. The bottom of the slough consists of very soft silt and fine sand.

4.2 Water Quality and Groundwater

In general, the water quality has been good in the lower Snohomish River and is rated by the State of Washington as Class A. Some water quality criteria related to temperature, pH, and turbidity, are of concern in the lower river

(<http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=wqi&scrolly=484&wria=07&sta=07A090#1>) . Historic water quality data for the Snohomish River are available for Snohomish (RM 12.7) and the Snohomish River at Highway 99 (RM 1.3). The water quality of the Snohomish River was evaluated by the Washington Department of Ecology which has given the segment of the river, near the Hwy 99 bridge, an overall “Water Quality Index Score” of 79 which equates to moderate concern. Downstream of the project site, near the mouth of Union Slough, the water is classified as a Category 4A which means that “data show that a characteristic use is impaired by a pollutant, but a TMDL addressing that impairment has already been developed and been approved by the EPA” (<http://apps.ecy.wa.gov/wqawa2008/viewer.htm>) .

Salinity in Union Slough at the Spencer Island Bridge ranges from 3.0 parts per thousand (ppt) at the surface to 8.0 ppt at a depth of two meters (during high tide event in September 1992). By comparison, salinity at Steamboat Slough was measured to be 8.2 ppt at a depth of five meters during a high tide in late summer.

A preliminary hazardous and toxic waste assessment screening was performed onsite on November 29, 2001 by the Corps. No evidence was uncovered to indicate that hazardous substance activity had taken place on the site.

A 401 Water Quality Certification was received from the Department of Ecology on December 9, 2002 for the original project. A construction Stormwater Pollution Prevention Plan has been prepared for the revisions to the original project which provides guidance for minimizing construction impacts to surface waters of the State.

Groundwater was encountered at or only slightly below the floodplain ground surface elevation in the initial explorations for the restoration project. Boring logs indicate that groundwater was observed at the time of drilling to be about 25 feet below the floodplain elevation. However,

groundwater levels likely vary with tidal fluctuations and should be expected to be within a few feet below the floodplain elevation throughout the year. Based on monitoring of the restoration site, it is known that water remains ponded onsite, especially on the west side of the project area.

4.3 Air Quality and Noise

Monitoring sites in Snohomish County are close to the daily fine particle federal standard. Sites in Snohomish continue to exceed the agency's local PM_{2.5} health goal set at 25 g/m³ to adequately protect health. Air quality index for Snohomish County in 2008 (latest data) was rated at Good for 80 percent and Moderate for 20 percent of the year (Puget Sound Clean Air Agency 2008 Air Quality Data Summary October 2009). PM_{2.5} is one of the major air pollution concerns affecting our region. PM_{2.5} primarily comes from wood burning and vehicle exhaust including cars, diesel trucks, and buses. Fine particulate can be formed in the atmosphere through chemical reactions of pollutant gases. Snohomish County continues to exceed the federal standard for PM_{2.5} on occasion. The project site is rural in character but bordered by urban activities. Background noise at the site is dominated by traffic noise coming from nearby I-5. In addition, the physical plant of the water pollution control facility contributes to the background noise in the area.

4.4 Biological Resources

4.4.1 Vegetation

A portion of Smith Island is still in agricultural use. Union Slough is almost entirely diked in the project vicinity. The areas behind the dikes are predominantly freshwater wetlands dominated by reed canary grass, and agricultural fields providing no access for fish. The dikes along Union Slough between the upper entrance of the Snohomish River and the project site, have limited riparian vegetation ranging from various deciduous species to areas dominated by blackberry which provide limited benefit for aquatic species.

Vegetation established in the site before the breaches included: cattails (10 percent), soft rush (8 percent), Himalayan blackberry, hardhack spirea (12 percent), Sitka willow, red alder (16 percent), and reed canarygrass (22 percent). With the inundation of the site, the areas of cattails and soft rush have been significantly reduced in size. Reed canary grass is declining in vigor more slowly (ICF Jones & Stokes 2009a). The lack of exposed ground surface at low tide has resulted in the slower than anticipated colonization of the area by native intertidal marsh vegetation. Areas of colonizing vegetation encompassed approximately 4.5 acres (13 percent) of the Corps site and five acres (9 percent) of the City of Everett site in 2008. Sampling in 2009 indicates that colonizing vegetation has increased to 5.9 acres (10 percent) on the City of Everett site. Cattails have become dominant on approximately one of the 5.9 acres and on 3.5 acres in the Corps site (ICF Jones & Stokes 2009b).

4.4.2 Fish

The Union Slough dikes isolate the floodplains of the Snohomish River and prevent tidal inundation and the scour necessary to form subsidiary and blind tidal channels. Tidal channels

are crucial for the transport of detritus both in and out of the areas, as well as providing access to intertidal rearing habitats (e.g. tidal marshes and mudflats) which form critical habitat for juvenile salmonids. With the dikes in place, there is no hydraulic connectivity between the river, Union Slough, or the river's floodplain. The lack of bio-mass and nutrient transport to the river and estuary has become an ecosystem limiting factor.

Union Slough and the lower Snohomish River supports runs of seven salmonids: coho (*Oncorhynchus kisutch*), chum (*Oncorhynchus keta*), pink (*Oncorhynchus gorbuscha*), Chinook (*Oncorhynchus tshawytscha*), coastal cutthroat (*Oncorhynchus clarki*), steelhead (*Oncorhynchus mykiss*), and bull trout (*Salvelinus confluentus*). All of these species are important in recreational fisheries, and five are important for commercial and Native American fisheries. All species spawn in freshwater upstream of the estuary. Spawning varies from August and September for pink and Chinook salmon to May through June for steelhead and cutthroat trout.

Upstream migration of adult salmonids occurs every month of the year, mostly in August through March. Migrating salmon can pass through Union Slough, though most fish use Steamboat Slough to the east and the Snohomish River to the west to reach upstream holding and spawning areas. By the time adult salmon and steelhead enter the Snohomish River, most have stopped active feeding. The smaller adult sea-run cutthroat trout and Dolly Varden, however, actively feed in the lower river channels and shorelines where favorable habitats are found.

Downstream smolt migration occurs mainly in the spring and early summer. Estuarine habitats provide a transition zone where juvenile salmonids physiologically adapt from fresh to salt water environments. The project site is designed to provide habitats for feeding and refuge from predation. In addition, the project site is envisioned to be an important source of primary production for the food chain to support salmonids, as well as other aquatic species.

During the 2008 fish monitoring effort, eight species of fish were documented as using the restoration site. Species collected included: pink, chum, Chinook, and coho salmon, three-spine stickleback, staghorn sculpin, starry flounder, and peamouth. The catch per unit effort of 33.1 fish per sample was achieved at the Corps site compared to 18.7 fish per sample at the City of Everett site (ICF Jones & Stokes 2009b). All of the salmon captured were juvenile fish (< 50mm in length).

The Magnuson-Stevens Act requires consultation for all federal agency actions that may adversely affect essential fish habitat (EFH). Consultation with National Marine Fisheries Service is required by federal agencies undertaking permitting or funding an activity that may adversely affect EFH regardless of its location. EFH for Pacific Coast Groundfish includes all waters and substrate within areas with a depth less than or equal to 3,500 m shoreward to the mean higher high water level or the upriver extent of saltwater intrusion (defined as upstream and landward to where ocean-derived salts measure less than 0.5 parts per thousand during the period of average annual low flow). EFH has been designated for groundfish and Pacific salmon in estuarine and marine areas. Habitats in EFH include tidally submerged environments and all

waters from the mean higher high water line. The site will provide approximately 93 acres of intertidal off-channel habitat for Pacific salmonids.

4.4.3 Wildlife

The adjacent water pollution control facility oxidation ponds and Spencer Island support a wide variety of wintering waterfowl. Although not considered a natural waterfowl habitat, the oxidation ponds are of value to waterfowl and other wildlife species. The oxidation ponds are considered one of the best waterfowl birding areas in Snohomish County. Eighteen waterfowl species use the ponds for resting, feeding, and/or breeding. Other shorebirds use the Spencer Island habitats such as great blue herons and other wading birds.

4.4.4 Threatened and Endangered Species

The breaching of the levee in October 2007 restored approximately 93 acres along Union Slough to tidal inundation, creating habitat for juvenile salmonids and a variety of other fish and wildlife species.

The U.S. Fish and Wildlife Service, and the National Marine Fisheries Service have indicated that the following endangered, threatened, or candidate species may occur in the project area:

- Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*) Threatened
- Bull trout (*Salvelinus confluentus*) Threatened
- Puget Sound/Strait of Georgia coho salmon (*O. kisutch*) Species of Concern
- Steelhead trout (*O. mykiss*) Threatened

4.5 Cultural Resources

A check of the State Archaeological Site Database found two known prehistoric sites approximately one mile from the project area. A field reconnaissance was attempted on May 22, 2001 by the Corps. However, the presence of heavy vegetation and standing water on the surface in areas prevented adequate visual examination of the site for resource evaluation. A letter of concurrence from the state Office of Archaeology and Historic Preservation was received on January 28 2002 agreeing with the Corps recommendations and finding of No Historic Properties in the area of potential effect and fulfilling the requirements of Section 106 NHPA. A cultural resources survey was completed in 2004.

4.6 Recreational Resources

To the east of the project area is Spencer Island that is a regional recreation area. Other areas on Smith Island are comprised of commercial and park land. The Union Slough dike has a regional trail located on top of the dike. This trail was mandated by the Shoreline Management Act and allows for access by the public to Union Slough. The oxidation ponds, the adjacent project area, and Spencer Island are a major destination for area bird watchers. The primary access to the Spencer Island Wildlife Area is through the south end of the project area on 4th Street at Langus Riverfront Park. While hunting is restricted in the project area, it is allowed on the north half of

Spencer Island. The City of Everett has restricted access to the bridges due to their determination of user safety. Pedestrian access is still available on the trail immediately to the west of the project site.

4.7 Socioeconomics

The south end of Smith Island is dominated by the City of Everett's water pollution control facility. The project area lies within the City of Everett and is zoned for the water pollution control facility. West of the water pollution control facility is I-5, the Snohomish River, and urban parts of the City of Everett. To the east of the project area is Spencer Island which is a regional recreation area.

The site is part of the City of Everett's water pollution control facility and does not have any permanent residents. Smith Island has few residents and adjacent Spencer Island is devoted to recreation with no permanent residents. Across the river to the west are the highly urbanized sections of the City of Everett.

Executive Order 12989, Environmental Justice in Minority Populations and Low Income Populations asks that each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. No residents live on or adjacent to the project site.

5 Effects of the Alternatives

5.1 Geology and Soils

5.1.1 No Action

The No Action alternative will have a minimal impact on geology and soils. Erosion of material into Union Slough will continue. Channel formation will occur at a reduced rate. Should the bridge supports continue to be undercut and scoured from the tidal flows, placement of material to minimize this erosion may occur.

5.1.2 Preferred Alternative

The overall site geology is not anticipated to change as a result of revisions to the project. There will be some regrading of the sediments due to the connecting of interior low spots. Once tidal exchange has been restored, sedimentation will occur in the marsh area as occurs in other tidally influenced areas of the estuary. Channel formation in the site is expected to increase.

5.1.3 Remove North Bridge Only

Impacts would be the same as the Preferred Alternative but would only occur at the north bridge location. Sedimentation will not occur as quickly due to the existing ground elevation at the central and south bridges which will remain minimizing tidal influences.

5.2 Water Quality and Groundwater

5.2.1 No Action

Should the bridge supports continue to be eroded, placement of material to minimize undercutting may occur. Turbidity would be generated with the no action alternative due to the continued erosional forces. In the long-term, if the structural integrity of the bridges is seriously compromised, the collapse of the bridges could occur. This may result in a blockage of the breach locations or severe reduction of the flow capacity. High temperatures will continue to occur during summer months in the ponded areas in the site.

5.2.2 Preferred Alternative

Short-term impacts are expected from construction activities. Water quality parameters would be affected, primarily short-term turbidity increased during construction. Sediment impacts can be reduced through the employment of best management practices (BMPs). BMPs may be used in any combination with the end result being no adverse impacts to water quality from the construction actions ensuring compliance with the Washington Department of Ecology water quality permit conditions (401 water quality certification). BMPs include the use of silt screens, hay bales, monitoring of construction vehicles, extra precaution when fueling, as well as the late July through October timing of construction. Best management practices should be implemented to avoid fuel or hydraulic spills associated with the use and storage of construction equipment on the site. A construction Storm Water Pollution Prevention Plan has been prepared and includes the following:

Installation guidelines and techniques can be found in the *Stormwater Management Manual for Western Washington, Vol. II* (WADOE 2005). Additional information is found in *Snohomish County Procedure and Policy 3044 Selection of Standards for Construction Stormwater Pollution Prevention Plan*. When applicable, BMPs shall be installed prior to construction activities to ensure maximum effectiveness. At least one of the contractor's personnel shall be designated as the responsible representative in charge of erosion and sediment control and water quality protection. The designee will have a current certificate proving attendance in an erosion and sediment control training course that meets the minimum requirements established by WADOE. The designated Certified Erosion and Sediment Control Lead (CESCL) will perform functions as specified in the *Stormwater Management Manual for Western Washington* (WADOE 2005).

It is anticipated that even while the repair work will be accomplished during the low point of the tidal cycles, there will be some increase in turbidity levels due to tidal action working over newly disturbed ground. This release will be short term and rapidly dissipate as the loose material is moved by tidal action.

To flood the entire 93-acre site to a depth of five feet and then drain it, approximately 458 acre-feet of water must pass through the combined openings during the flood and ebb tidal cycle. Therefore, on average, approximately 300 cubic feet per second must be flowing through each breach to maintain the same water surface elevation in the site as in Union Slough (ICF Jones &

Stokes 2009b). Therefore, some turbidity will be anticipated to continue after construction until sediment loads equalize. Currently the site drains approximately 40 percent by area at ebb flow. Based on modeling results, the removal of all three bridges is expected to increase drainage area during ebb flows to approximately 60 percent (Battelle 2010). The actual percent may be higher since the model lacked stations in the southern portion of the site (location of central and south bridge). Water elevations are expected to drop from approximately one to two feet from current conditions.

Long-term changes in water quality are expected to improve due the reintroduction of additional tidal exchange to the project area. However, because of elevation requirements to remove the bridges, geogrid foundations, and remnant dikes for more complete drainage of the predicted tide elevations, it may be necessary to operate within the breach areas during wet conditions during the work window. It is anticipated that the revisions to the project will include the use of floating silt curtains along Union Slough with localized isolation techniques to allow working in a wet environment. Temporary bypass roads, culverts, and turnarounds are anticipated to be constructed near the south and central bridge within the City's jurisdictional boundaries. Over the long-term water quality will improve as ponded areas drain, eliminating areas for water to warm during the summer time.

5.2.3 Remove North Bridge Only

Impacts would be the same as the Preferred Alternative but would only occur at the north bridge location. Sedimentation in the restoration area will not occur as quickly due to the existing ground elevation at the central and south bridges which will remain minimizing tidal influences. Some areas of the site would continue to experience ponding and elevated water temperatures in the summer. However, the removal of the north bridge in the model, results indicate that an increase to 50 percent drainage area is expected (Battelle 2010) which would reduce ponded areas with elevated water temperatures. Water elevations are expected to drop approximately one foot from current conditions.

5.3 Air Quality and Noise

5.3.1 No Action

No impacts to air quality or noise would occur with the No Action alternative.

5.3.2 Preferred Alternative

There will be some minor short-term impacts to air quality due to the use of construction equipment (such as excavators, dump trucks, and bulldozers). Slight elevation of carbon dioxide and particulates levels are expected in the immediate construction area. This is not expected to be of any significance as the construction area is large and open. The proposed activities would not exceed *de minimis* levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. There will be some minor short-term noise impacts due to the use of construction equipment (60 to 76 dBA at 200 feet, as generated by excavators, dump trucks, and bulldozers). Very few dwellings are located near the construction area, and there is already significant background noise from I-5 and the water pollution control facility.

5.3.3 Remove North Bridge Only

Impacts would be the same as the Preferred Alternative but would only occur at the north bridge location.

5.4 Biological Resources

5.4.1 No Action

Turbidity would be generated with the no action alternative due to the continued erosion of the bridge foundations. Turbid waters are generally not a preferred habitat for aquatic species. The rate of conversion of vegetation from reed canary grass to native intertidal marsh species would continue to be slower than expected or nonexistent due to the persistent ponding. Aquatic species usage of the restoration site would not occur at the levels expected. The “No Action Alternative” would not meet the need and purpose of the project, the local sponsors, or the environment.

Based on monitoring of the restoration site, it is known that water remains ponded onsite, especially on the west side of the project area. At low tide 67 percent of the City of Everett site and 57 percent of the Corps site remains inundated at low tide. The project design intended less than five percent of the area to be inundated at low tide (ICF Jones & Stokes 2009a). During summer months, high temperatures have been recorded in the shallow ponds. However, salmon can move from these ponds at low tides via the drainage channels.

5.4.2 Preferred Alternative

Effects to listed species would be temporary in nature consisting of elevated noise (birds, mammals, and fish) and turbidity levels. Since the project is proposed to be constructed during the lowest tides during the approved fish window (July 15 to October 31), effects would be of short duration. Best Management Practices would be implemented to minimize turbidity effects.

Since the bridges have been identified as a confounding factor resulting in scour, their removal will improve and restore the ecological benefits expected from the initial design. Grading would eliminate the high elevation at the breaches which confounds the lack of tidal flushing due to the fact that the current effective openings of each breach is only 15 to 20 percent of the bridge length. Restoring the tidal process would result in the formation of dendritic channels which are important habitats. Increased tidal connections would provide the habitat originally designed to provide feeding and refugia for aquatic species.

Since listed salmonids are unlikely to be in the project area during the in-water work window, and the revisions to the proposed work would restore shallow water habitats, the proposed action has been determined not likely to adversely affect salmonids or their critical habitats. The revisions to the project will not have a positive or negative impact on EFH for groundfish. The revisions to the project will not adversely impact EFH for Pacific salmon or groundfish.

5.4.3 Remove North Bridge Only

Impacts would be the same as the Preferred Alternative but would only occur at the north bridge location.

5.5 Cultural Resources

5.5.1 No Action

No impacts to cultural resources would occur with the No Action alternative.

5.5.2 Preferred Alternative

Implementation of the preferred alternative will not affect any known prehistoric or historic properties potentially eligible for the National Register. As there is at least the possibility of encountering small buried sites or “wet site” features with exceptional preservation, during construction it is recommended that monitoring be conducted by professional archaeologists. A letter of concurrence from the state Office of Archaeology and Historic Preservation was received on 28 Jan 02 agreeing with the Corps recommendations and finding of No Historic Properties in the area of potential effect and fulfilling the requirements of Section 106 NHPA.

It is recommended that Seattle District staff archaeologists be present during construction. If any inadvertent discoveries of archaeological materials are made during construction or testing, all activities in the immediate area of such a find will cease until it can be assessed, and the State Historic Preservation Officer informed.

5.5.3 Remove North Bridge Only

Impacts would be the same as the Preferred Alternative but would only occur at the north bridge location.

5.6 Recreational Resources

5.6.1 No Action

Impacts to recreational resources would occur with the No Action alternative. The three pedestrian bridge foundations could continue to degrade due to erosion. The relocation of the recreation trail to the west of the project would continue to be used but the usage of the trail adjacent to Union Slough would be eliminated for safety concerns.

5.6.2 Preferred Alternative

The construction of the revisions to the project will result in a temporary disruption of access to the wildlife viewing and closure of access to the shoreline trail along Union Slough and Spencer Island. Over the long-term the revised project will not result in a change in non-consumptive uses of the project area since the shoreline trail will be replaced to the west of the project site. Since the recreational trail will be relocated closer to the oxidation ponds, recreational users will have closer view points for bird watching of waterfowl and shorebirds. Access to Spencer Island Wildlife Area will not be impacted. Current recreational uses, such as bird watching and running, would still occur. Therefore, the temporary and permanent relocation of the recreational trail would not have any impacts on recreational uses.

5.6.3 Remove North Bridge Only

Impacts would be the same as the Preferred Alternative but would only occur at the north bridge location.

5.7 Socioeconomics

5.7.1 No Action

No impacts to socioeconomics would occur with the No Action alternative.

5.7.2 Preferred Alternative

The project as proposed is not expected to change the demographics in the area surrounding the project. No households or businesses will be impacted by project construction. The overall land use of the project area will not change and the area will remain undeveloped and function as fish and wildlife habitat. The site is part of the City of Everett water pollution control facility and does not have any permanent residents. Smith Island has few residents and adjacent Spencer Island is devoted to recreation with no permanent residents. Across the river to the west are the highly urbanized sections of the City of Everett. Therefore, the revised project would not impact socioeconomic resources.

These revisions to the project are expected to comply with Executive Order 12989, Environmental Justice in Minority Populations and Low Income Populations. The project location is remote and the residents of this area and the Puget Sound region will have an opportunity to enjoy the natural amenities of this habitat restoration project.

5.7.3 Remove North Bridge Only

Impacts would be the same as the Preferred Alternative but would only occur at the north bridge location.

6 Unavoidable Adverse Effects

The anticipated unavoidable adverse effects that could occur as a result of the preferred alternative are temporary stress and displacement of forage fish, loss of benthic inhabitants that would be removed with the remnant levee material and construction of low flow channels, and noise disturbance to humans, birds, and mammals within the local area. Given the temporary, localized, and discountable nature of these effects, the effects are not considered significant. Impacts to fish and wildlife have been considered and will be reduced and/or avoided through implementation of timing restrictions. No adverse impacts to threatened or endangered species are anticipated.

7 Irreversible and Irretrievable Commitments of Resources

No federal resources would be irreversibly and irretrievably committed to the proposed action until this Environmental Assessment is finalized and a “Finding of No Significant Impact” or “Record of Decision” has been signed.

8 Cumulative Effects

The NEPA defines cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR §1508.7).

This area of the Union Slough dike has been used as protection for the water pollution control facility which was constructed in 1960. This restoration project would not contribute to any further development of the area, nor cause an increase in human activity. However, the project would contribute to the overall restoration of the Snohomish River delta along with several other completed or ongoing projects. The Corps concludes that there would not be significant cumulative impacts associated with the revisions to this project.

9 Environmental Compliance and Coordination

LAWS AND REGULATIONS RELATING TO THE PROPOSED ALTERNATIVE	SUMMARY OF REQUIREMENT	CONSISTENCY OF PREFERRED ALTERNATIVE
National Environmental Policy Act (NEPA) 42 USC 4321 et seq.	Requires all Federal agencies to consider the environmental effects of their actions and to seek to minimize negative impacts	Compliant – Draft Amendment to the Environmental Assessment completed and made available for public comment; Draft Finding of No Significant Impact prepared
Endangered Species Act 16 USC 1531 et seq.	Requires Federal agencies to protect listed species and to consult with USFWS and NMFS regarding the proposed action	Consistent – a Biological Evaluation was prepared and received concurrence from each agency for the original project in 2003. The agencies have reconfirmed that the existing consultations are still valid.
Clean Water Act Section 401 402 and 404	Requires Federal agencies to comply with state water quality standards	Consistent – Consistent with NWP 27 by analogy. Since the project is still in the construction phase, the existing 401 certification is valid and an amendment to the 401 Water Quality Certification has been requested from the Washington Department of Ecology. A stormwater pollution prevention plan has been prepared for the stormwater discharge permit during plans and specs
Coastal Zone Management Act	Requires Federal agencies to comply to the maximum extent practicable with approved state coastal zone management programs	Consistent by analogy because the original project followed the Nationwide 27 permit guidelines, consistency with CZMA and has already been granted for this nationwide permit. The revised project is designed to be consistent with these NWP 27.
Clean Air Act	Section 176 of the Clean Air Act, 42 USC 7506(c), prohibits	Compliant – The proposed activities would not exceed

	Federal agencies from approving any action that does not conform to an approved state or Federal implementation plan	<i>de minimis</i> levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153.
National Historic Preservation Act	Requires Federal agencies to identify and protect historic properties	Compliant – refer to the Cultural Resources section of this document
Executive Order 12898 Environmental Justice	Requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations	Compliant – the surrounding area is a non-residential area, which would benefit from the action, and has no significant proportion of minority or low-income populations
Essential Fish Habitat	Requires Federal agencies to address environmental effects for actions undertaking permitting or funding an activity that may adversely affect EFH	Consistent - The Corps consulted with the NMFS to include conservation measures adequate to avoid, minimize, or otherwise offset adverse impacts to EFH. The original project and this revision to the project was determined to be compliant.

10 Conclusions

This Environmental Assessment has included an examination of all practicable alternatives for meeting the need of providing the ecosystem restoration benefits described in the 2003 Project Modification Report/Environmental Assessment, as well as the need to address the scour damage that is occurring to the bridge foundations. The Preferred Alternative is the most effective alternative that meets these needs. The plan does not impair the original Federal project at this site for navigation, and is consistent with national policy, statutes, and administrative directives. The plan has been reviewed in light of overall public interest, which includes the views of the local sponsor and interested agencies. The Corps has concluded that the City of Everett is capable of meeting their financial obligations and that the total public interest would be served by implementation of the recommended revisions to the original plan. Based on this assessment and on coordination with federal and state agencies, the proposed revisions to the project are not expected to result in significant adverse environmental impacts. The revisions to the proposed project are not considered a major federal action having a significant impact on the human environment. Therefore, the preparation of an environmental impact statement is not required.

11 References

Battelle Pacific Northwest National Laboratory. 2010. Hydrodynamic Modeling Analysis of Union Slough Restoration Project in Snohomish River, Washington.

City of Everett, Department of Planning and Community Development. 2002. EVERETT SHORELINE MASTER PROGRAM

City of Everett, Department of Planning and Community Development. April 1997. Snohomish Estuary Wetlands Integration Plan

ICF Jones & Stokes. 2009a. Alternatives Analysis for Adaptive Management of Site Hydraulics and Public Access at the Smith Island/Union Slough Restoration Project.

ICF Jones & Stokes. 2009b. As Built and Year 1 Report on Corps Section 1135 portion of the Smith Island/Union Slough Restoration Project. Technical Memorandum, April 29, 2009.

February 2003. Union Slough 1135 Restoration Project Everett, Washington Final Project Modification Report/Final Environmental Assessment and Finding of No Significant Impact.

DRAFT

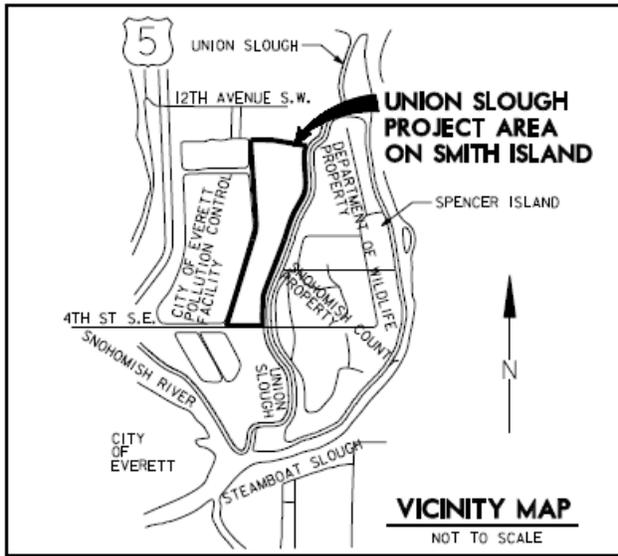


Figure 1 Project Location



Figure 2. Union Slough Site View

**AN AMENDMENT TO THE UNION SLOUGH 1135 RESTORATION PROJECT
FINAL PROJECT MODIFICATION REPORT/FINAL ENVIRONMENTAL ASSESSMENT DATED
FEBRUARY 2003**

**DRAFT ENVIRONMENTAL ASSESSMENT
CITY OF EVERETT, SNOHOMISH COUNTY, WASHINGTON**

DRAFT FINDING OF NO SIGNIFICANT IMPACT

1. Background. The proposed action is described in detail in the attached environmental assessment. The Union Slough Restoration project was developed under the authority of Section 1135 of the Water Resources Development Act of 1986 (Public Law 99-662), as amended, and the bridge removal project is in accordance with EC 1105-2-214, Project Modifications for Improvement of the Environment and Aquatic Ecosystem Restoration (dated September 1997). The goal of the Union Slough Restoration Project was to create and restore critical salmon rearing habitat, while maintaining flood protection to the City of Everett's water pollution control facility.

2. Purpose and Need. In 2006 the US Army Corps of Engineers cost-shared a Section 1135 project with the City of Everett, a non-federal sponsor. The project, known as the Union Slough Restoration Project, included breaching the Union Slough levee at three locations to create and restore critical salmon rearing habitat. A setback levee was constructed along the City's water pollution control facility to maintain flood protection. Follow on studies by the City and the Corps indicated that the project has not achieved the project's ecological benefits to the extent originally anticipated, due to issues of insufficient sediment exposure as the tide ebbs. Additionally, several sections of the pedestrian bridges are experiencing undercutting caused by scour from the tidal flows through the breaches.

3. Proposed Action. The proposed revisions to the original design would improve water movement within the newly opened areas designed to provide salmon rearing habitat. The revised project proposes to remove the bridges, due to their unsafe nature, and recontour the sediments to achieve full tidal flushing. The bridge removal project will consist of relocating the pedestrian trail to the west along the setback levee, removal of the pedestrian bridges, removal of remnant levee material along the slough side of the breaches, and create additional low flow channels within the restoration site to facilitate additional drainage during tide cycles.

4. Summary of Environmental Impacts. Pursuant to the National Environmental Policy Act, an Amendment to the Environmental Assessment (EA) has been prepared for the proposed revisions to the original design. This document describes the environmental consequences of the proposed revisions, which are briefly summarized below.

Some increased turbidity will likely occur during the bridge removal component of the project, but best management practices will be in place to avoid and minimize potential impacts. The revised proposed action could include a temporary decrease air quality due to emissions from the construction equipment and vehicles of construction personnel. The revised proposed action will

temporarily increase noise levels in the project areas which may disturb birds, mammals, and public recreation users. However, these effects are expected to be short-term and localized, and therefore have no significant impact on the project or action areas

Construction will take place during a time period approved by Washington Department of Fish and Wildlife, NOAA Fisheries, and the U.S. Fish and Wildlife Service which minimizes the likelihood of adverse construction impacts to listed species.

Cumulative impacts of the revised proposed project have been evaluated and are expected to incrementally enhance ecological functions and values, particularly with regard to salmonid passage and habitat utilization.

5. Finding. Based on the analysis described above and provided in more detail in the EA, these revisions to the project are not a major federal action significantly affecting the quality of the human environment and, therefore, does not require an environmental impact statement.

Date

Anthony O. Wright
Colonel, Corps of Engineers
District Engineer