FINAL
ENVIRONMENTAL ASSESSMENT

LEVEE REHABILITATION
SKOOKUMCHUCK RIVER LEVEE, LEWIS COUNTY, WASHINGTON

Prepared by:
U.S. Army Corps of Engineers
Seattle District

May 2011

This page was intentionally left blank to facilitate double-sided copying.

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Project Location and Description 1
1.2 Project Purpose and Need 3
1.2.1 Need 3
1.2.2 Purpose 3
1.3 Authority 3
2.0 ALTERNATIVES CONSIDERED 3
2.1 No-Action Alternative 4
2.2 Non-Structural Alternative 4
2.3 I-Wall Alternative 4
2.4 Set Back Alternative 4
2.5 Repair to Pre-flood Condition (Preferred Alternative) 4
3.0 EXISTING CONDITIONS 5
3.1 Basin Characteristics and Setting 5
3.2 Hydrology/Geology/Soils 5
3.3 Water Quality 6
3.4 Vegetation and Wetlands 7
3.5 Floodplains 8
3.6 Land use 8
3.7 Fish and Wildlife 9
3.8 Sensitive, Threatened and Endangered Species 10
3.9 Cultural Resources 12
3.10 Air Quality 12
3.11 Climate 13
3.12 Noise 13
3.13 Traffic 13
3.14 Socioeconomics 13
4.0 ENVIRONMENTAL EFFECTS OF THE PREFERRED ALTERNATIVE 13
4.1 Hydrology 14
4.2 Water Quality 14
4.3 Vegetation and Wetlands 14
4.4 Floodplains 15
4.5 Land Use 15
4.6 Fish and Wildlife 15
4.7 Sensitive, Threatened and Endangered Species 16
4.8 Cultural Resources 16
4.9 Air Quality 17
4.10 Climate 17
4.11 Noise 18
4.12 Traffic 18
4.13 Environmental Justice 18
4.14 Unavoidable Adverse Effects 18
4.15 Cumulative Effects 19
5.0 COMPLIANCE WITH LAWS, REGULATIONS AND EXECUTIVE ORDERS 20

5.1 Federal Statutes 20
5.1.1 American Indian Religious Freedom Act 20
5.1.2 Bald and Golden Eagle Protection Act (BGEPA) 20
5.1.3 Clean Air Act 20
5.1.4 Coastal Zone Management Act 21
5.1.5 Endangered Species Act 21
5.1.6 Federal Water Pollution Control Act 21
5.1.7 Magnuson-Stevens Fishery Conservation and Management Act 22
5.1.8 National Environmental Policy Act (NEPA) 23
5.1.9 National Historic Preservation Act 23
5.2 Executive Orders 23
5.2.1 Executive Order 11990, Protection of Wetlands 23
5.2.2 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations 24
6.0 CONCLUSION 24
7.0 REFERENCES 24

LIST OF FIGURES

Figure 1. Vicinity Map. 2
Figure 2. Project Location. The yellow line shows the full extent of the levee, the red lines show the location of the three repair sites. 2
Figure 3. 303(d) listing at project vicinity 7

APPENDIX A: Project Drawings
APPENDIX B: Tribal and SHPO Coordination
APPENDIX C: Public Comment
APPENDIX D: Coordination with Washington Department of Ecology
APPENDIX E: 404(b)(1) Analysis
APPENDIX F: Finding of No Significant Impact

1.0 INTRODUCTION

The US Army Corps of Engineers (USACE) in concert with City of Centralia is proposing to repair damage along Skookumchuck Levee located on the Skookumchuck River in the City of Centralia, Lewis County, Washington. Work is scheduled to be conducted in summer 2011. Skookumchuck Levee incurred damage during a flood event that occurred as a result of rainfall and snowmelt on 3-4 December 2007. Rainfall and snowmelt resulted in a 10-year event on the Skookumchuck River upstream at Bloody Run Creek. Concurrently, there was a 150-year event on the Chehalis River near Chehalis. The high river stage on the Chehalis River prevented the Skookumchuck River flow from entering the Chehalis. This restricted outflow caused the already high Skookumchuck River stage to rise further above flood stage. This resulted in damage to three locations along the Skookumchuck Levee with a total of approximately 865 linear feet of damage. Several other levees in the vicinity of the Chehalis River and its tributaries, the Skookumchuck River and Salzer Creek, were damaged as a result of these floods.

A major portion of the Chehalis River basin is lined with levees. These levees serve to reduce the risk of flooding of the surrounding agricultural, rural and suburban areas including the towns of Chehalis and Centralia. This project is intended to repair the portions of the Skookumchuck Levee damaged by the December 2007 floods.

This environmental assessment is being prepared pursuant to Sec. 102(C) of the National Environmental Policy Act (NEPA).

1.1 Project Location and Description

Skookumchuck River enters the Chehalis River at approximately river mile 67 in the upper Chehalis River basin. Skookumchuck Levee is located along the left bank of Skookumchuck River in the town of Centralia, in western Washington (Figures 1 and 2). The damage locations are located on the left bank of the Skookumchuck River between river miles 2.1 and 2.7.

Figure 1. Vicinity Map.

Figure 2. Project Location. The yellow line shows the full extent of the levee, the red lines show the location of the three repair sites.

Skookumchuck Levee is approximately 4,100 feet in length. This levee is located in Sections 4 and 5, Township 14 North, Range 2 West. The levee is composed of earthen material with a gravel/sod driving surface and sod side slopes with some armor protection at the toe of the riverward slope. The project was originally constructed with typical riverward and landward slopes of 1.5H:1V (horizontal to vertical) to 2H:1V. In its pre-flood condition, the levee was designed to provide protection from the 4% (25-year) flood event.

1.2 Project Purpose and Need

1.2.1 Need

On 3 and 4 December 2007, rainfall and snowmelt resulted in a 150 year peak flooding event on the Chehalis River. Flood flows in the Skookumchuck River were less severe, however flows were unable to exit into the Chehalis River. This backup and continued incoming flows caused flooding and erosion along the Skookumchuck River. During this event, the Skookumchuck Levee sustained damage in three places. Damages occurred along a total of 865 linear feet of the levee: 140 feet of toe scour from station 20+20 to 21+60; 325 feet of toe scour, riverward slope erosion and some seepage damage on the landward side from station 23+20 to 26+45; and 400 feet of toe scour and riverward slope erosion from station 34+60 to 38+60.

This levee is integral to protecting public safety and property. The levee protects much of the northern half of the City of Centralia (2008 estimated population 15,520). The 2000 census data indicate that the area protected from flooding by the levee includes over 1,200 housing units, total depreciated replacement property value of almost $60 million. The levee was designed to provide protection from the 25-year flood event; however in its current damaged condition the levee offers approximately 4-year level of protection.

1.2.2 Purpose

The purpose of the project is to restore the pre-existing level of flood protection to the Skookumchuck Levee which was damaged in the December 2007 flood event.

1.3 Authority

The proposed levee repairs are authorized by Public Law 84-99 (33 U.S. Code Section 701n). USACE rehabilitation and restoration work under this authority is limited to flood control works damaged or destroyed by flood. The statute authorizes rehabilitation to the level of protection exhibited by the flood control work prior to the damaging event. The levee proposed to be repaired was not built by and is not maintained by USACE. City of Centralia Public Works requested USACE assistance in the levee repairs following the 2007 flood event.

2.0 ALTERNATIVES CONSIDERED

Alternatives considered under NEPA must include the proposed action (Preferred Alternative), and the no-action alternative. A reasonable range of alternatives that meet the project purpose and need should also be considered.

Multiple alternatives were considered including the No-Action Alternative, the Non-Structural Alternative, the I-Wall Alternative, the Set Back Alternative, and the Repair to Pre-flood Condition Alternative (the Preferred Alternative). In order for any alternative to be acceptable for consideration it must meet certain objectives. The alternative must provide for a level of flood protection equivalent to the level of protection that pre-existed the flood event. Also, pursuant to USACE policy, the selected alternative must be economically justified, it should be environmentally acceptable, and it should minimize costs for both the non-Federal Sponsor and the Federal government to the extent possible.

2.1 No-Action Alternative

This alternative consists of leaving the levee in its current damaged condition and taking no action to address the damage incurred in the 2007 flood and the present four-year level of protection. This alternative has high potential for flood damage to the protected structures and lands behind the levee. The no-action alternative does not meet the project purpose and need, and is brought forward for comparative purposes.

2.2 Non-Structural Alternative

The Non-Structural Alternative would raise or relocate all existing public facilities and commercial structures. Because the costs associated with flood proofing or relocating the structures in the potential inundation area would significantly exceed the cost of repairing the levee, the non-structural alternative was eliminated from further consideration.

2.3 I-Wall Alternative

The I-Wall Levee alternative would allow the levee repair within the original levee footprint. This alternative was considered due to the highly developed nature of the area. Construction cost of an I-wall is approximately four times higher than the preferred alternative. Due to the high cost, this alternative was not pursued further.

2.4 Set Back Alternative

This Set Back Alternative would move the levee landward to allow the Skookumchuck River more conveyance though the project reach. This alternative was screened from further analysis as it would require the acquisition of land by the sponsor and would require hydraulic and geotechnical modeling studies to show the effects of the levee setback and eventual channel modification. The costs associated with this alternative far outweigh the costs of repairing the levee in place. This alternative was not selected for further analysis.

2.5 Repair to Pre-flood Condition (Preferred Alternative)

This alternative consists of restoring the levee to pre-flood conditions by re-establishing the levee prism, including the riverward and landward slopes and the levee crown. See Appendix A for project drawings.

The full repair alternative re-establishes the levee toe and prism with 2H:1V riverward slope at the two upstream locations, and a 1.5H:1V riverward slope at the downstream location. The levee toe would be re-established at all three locations, by excavating the riverward levee face and reworking the existing bank to re-establish a 3’ X 5’ toe at the two upstream locations and a 5’ X 3’ toe at the downstream location, using Class III riprap. The recommended repair would

restore the levee back to the pre-flood 25-year level of protection. At the repair location between stations 23+20 and 26+45, the crown would be extended landward by approximately 6 feet, and the landward slope would be steepened to 2H:1V, while remaining within the pre-existing levee footprint. At the repair location between stations 20+20 and 21+60 the project would create a 2' by 6' seepage berm on the landward side, thus enlarging the landward footprint by 6 feet as compared with the footprint pre-existing the flood event. Prior to construction, the levee repair locations would be cleared and grubbed. The scour and erosion damage would be repaired by excavating the existing levee prism and replacing the material using proper construction methods. The levee would be cut down where necessary and reconstructed per EM 1110-2-1913 chapter 7, table 7-1, Category II – semi-compacted construction method. The imported levee material shall be of similar gradation to the existing levee material.

After construction the repaired landward slopes would be hydroseeded with native grass seed mix to prevent erosion after construction. The repair includes construction of a willow lift to be placed just above ordinary high water at each of the two upstream repair locations. All necessary measures, including irrigation, would be taken to maximize the potential for planting success.

3.0 EXISTING CONDITIONS

3.1 Basin Characteristics and Setting

The Chehalis basin encompasses 2,520 square miles and drains 2,660 square miles of land (Chehalis River Council 1992). The Chehalis River originates in the Willapa Hills and flows approximately 125 miles, through seven Washington counties, before emptying into Grays Harbor estuary on the Pacific Coast. The Chehalis River Basin can be divided into several basin regions; the proposed repair sites included in this EA are located along Skookumchuck River within the middle Chehalis River basin. Major tributaries to the middle Chehalis basin include the Newaukum and Skookumchuck Rivers, respectively located north and south of the city of Centralia; minor tributaries include Salzer and China Creeks.

The Skookumchuck River is approximately 45 miles long with a basin area of 202 square miles (Chehalis River Council 2010). The average annual discharge from the subbasin is estimated to be 247 cfs. Much of the Skookumchuck basin is coniferous forest with some agriculture. A reservoir for power production, with a capacity of 35,000 acre-feet, was constructed on the Skookumchuck River at RM 21.9 between 1968 and 1971 by Pacific Power and Light Company, with regulation of flow beginning in 1971 (Chehalis River Council 2010). There are other minor diversions of water from the river for domestic and irrigation uses.

3.2 Hydrology/Geology/Soils

The middle basin of the Chehalis River has mild, rainy winters and dry, warm summers. Annual mean precipitation on the Skookumchuck basin ranges from 40 to 80 inches (Chehalis River Council 2010). Although there is some snow melt from the Olympic Mountains, the Chehalis basin is primarily a rain fed system with peak flows during the winter rains and low flows during the dry summer season (Ecology 2010). The 2007 flood event peaked on December 4, reaching a daily mean elevation of 179.27 feet above National Geodetic Vertical Datum (1929) at the Chehalis River Waste Water Treatment Station 1202510 (USGS 2008).

The Skookumchuck River begins in the westernmost region of the Snoqualmie National Forest and flows northwest to the town of Bucoda, and from there to the confluence with the Chehalis River at Centralia. Elevations within the subbasin range from 150 feet at the mouth of the Skookumchuck River to over 3,000 feet at the headwaters. The gradient of the Skookumchuck River from its source to the town of Bucoda is steep, falling an average of 19 feet per mile (Chehalis River Council 2010). Then it flattens and falls about five feet per mile in the lower reach. Except for the extreme upstream portion, the Skookumchuck River flows through a winding channel in floodplains varying from a few hundred feet to 0.5 mile in width. The Skookumchuck River subbasin is 90% woodland; the remaining 10% consists largely of cropland (Chehalis River Council 2010).

Geologic characteristics and associated hydrologic conditions of the middle Chehalis River basin are largely a product of the complex geologic history of the area and vary widely. Over the last 40,000 years the Chehalis River basin has seen activity in tectonic processes associated with the structural geology of this region (Reichmuth et al 1998). The basic geology of the basin can be summarized as older bedrock of both sedimentary and volcanic origin exposed on hillslopes and ridges, with more recent depositions of glacial and alluvial sediments overlying these rock units in the valley bottoms and lowland prairies. Groundwater in substantial quantities is present in the glacial deposits as well as alluvial sediments in the major river valleys. The upper Chehalis and Newaukum rivers cut through the Logan Hill Formation, the results of glacial outwash from Cascade Range montane glaciation that occurred around the end of the Pleistocene (Snavely et al. 1958 in Nelson 1993). The middle Chehalis River basin contains sedimentary rock in higher areas and a thick mix of glacial and alluvial sediments on the valley floor, where a significant shallow aquifer is present (Envirovision 2000). Soils near the project area include Indianola loamy sand, Newberg fine sandy loam, and Spanaway gravelly sandy loam. All of these soils are well drained to somewhat excessively drained floodplain soils with an average of more than 80 inches depth to the water table (NRCS 2010).

3.3 Water Quality

In the vicinity of the project (RM 2.1 and 2.7), the State of Washington classifies the Skookumchuck River as core summer habitat for aquatic life uses, extraordinary primary contact for recreational uses, approved for all water supply uses, and miscellaneous other uses (from WAC 173-201A-602). The Chehalis River and portions of the Skookumchuck River are listed on the Washington State Department of Ecology's (WDOE) impaired water quality list, category 5 of the 303(d) list for PCB, turbidity, dioxin and category 4A of the 303(d) list, for exceeding temperature (2011). None of these listings apply to the Skookumchuck River within the project area; however downstream of the project site is listed as category 5 for PCB and dioxin and category 4A for temperature (Figure 3).

Water quality problems are well documented in the mainstem Chehalis River upstream of Porter Creek, particularly for warm water temperatures and low dissolved oxygen levels. The temperature problems are likely related to riparian loss, increased sedimentation resulting in channel changes (width–to-depth ratios), and decreased water flows, not only in the mainstem Chehalis, but also in tributaries (Smith and Wenger 2001). Warm water temperatures and low dissolved oxygen levels are also documented in tributaries including the Humptulips, Wynoochee, Satsop, Wildcat, Independence, Lincoln, Black, Scatter, Skookumchuck, Salzer,

Dillenbaugh, Newaukum, Stearns, Bunker, South Fork Chehalis, and upper Chehalis sub-basins. The known causes of the poor water quality problems in these sub-basins are riparian loss or conversion, livestock waste, sedimentation, decreased flows, industrial inputs, and urban stormwater. It is also likely that the reduction in wetlands has contributed to degraded water quality (Smith and Wenger 2001).

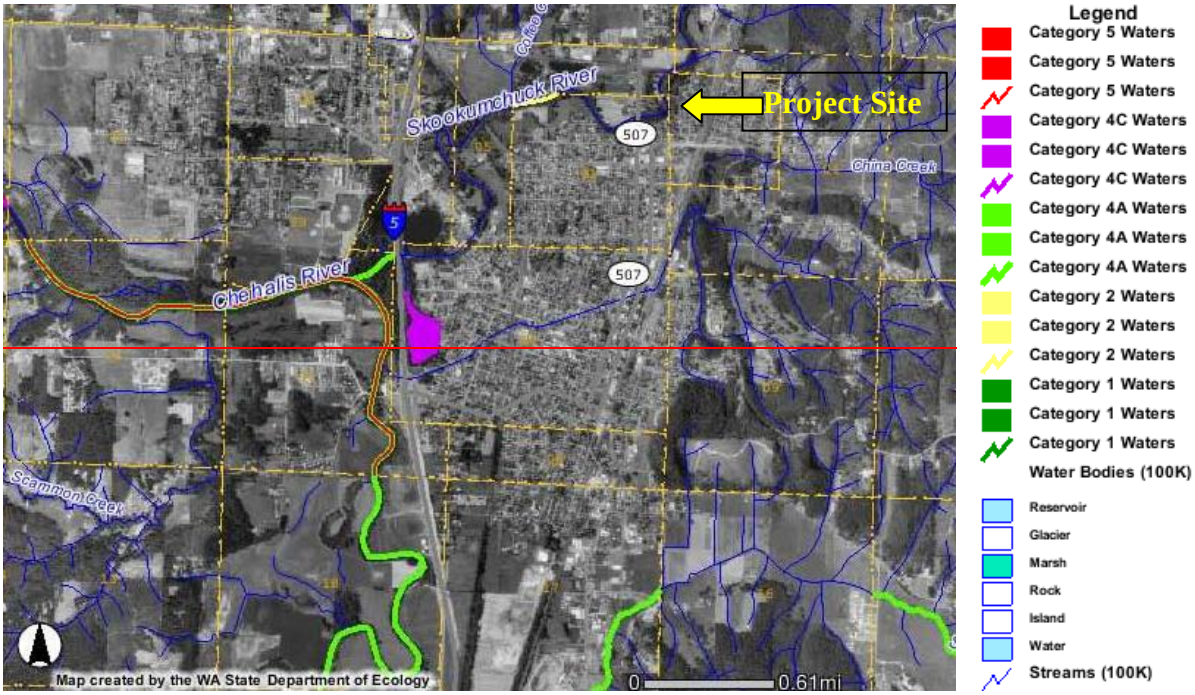


Figure 3. 303(d) listing at project vicinity

3.4 Vegetation and Wetlands

The middle Chehalis River basin in the vicinity of Skookumchuck River Levee is generally characterized as a western hemlock zone, in which western hemlock (*Tsuga heterophylla*), Douglas Fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*) are common dominant tree species in upland habitats. A variety of other trees, shrubs and berries tend to dominate the landscape.

The USFWS has mapped the areas directly adjacent to Skookumchuck River Levee as freshwater forested/shrub wetlands (USFWS 2008). A National Wetland Inventory (NWI) map is shown in Figure 4. A USACE biologist conducted a site visit and found no wetlands to be present in the project footprint. However, wetlands are present on the benches upstream of station 20+20 and stations 34+60 to 31+50.

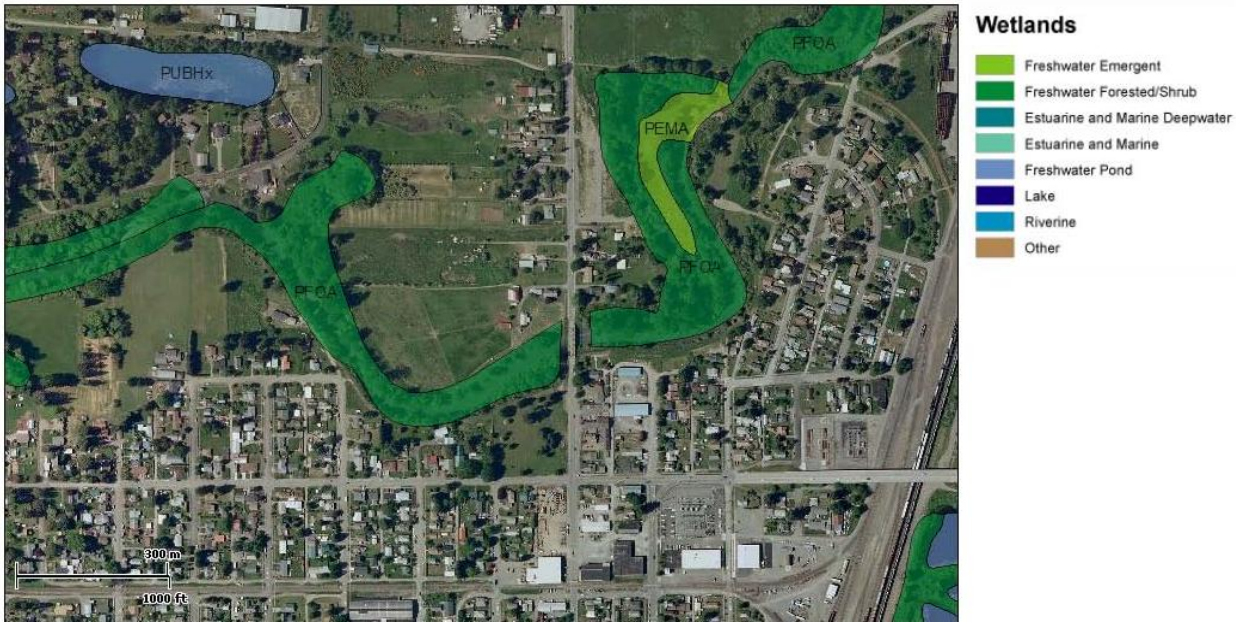


Figure 4. NWI map of the vicinity of the project area.

The top and slopes of the levee is comprised of mowed grasses and includes typical pasture species. Vegetation on the river side of the levee, including existing benches between the river and levee, is mixed. Patches of reed canarygrass (*Phalaris arundinacea)* and Himalayan blackberry (*Rubus aremeniacus*) are interspersed with clumps of red alder (*alnus rubra),* re-osier dogwood (*Cornus stoloniferia),* and black cottonwood (*Populus balsamiferia).* The vegetation along the existing project levee slopes was recently cleared of trees by the local sponsor.

3.5 Floodplains

Levees are located by definition in floodplains; Skookumchuck Levee is intended to protect property and infrastructure within the floodplain on northern half of the City of Centralia. Except for the extreme upstream reach, the Skookumchuck River flows through a winding channel in floodplains varying from a few hundred feet to 0.5 mile in width (Chehalis River Council 2010). Near the town of Bucoda (RM 11), the landscape changes from low hills with moderate to steep gradients to a broad flat valley with low gradients. The only levee system within the PL 84-99 program on the Skookumchuck River is the segment that includes this repair project.

3.6 Land use

Historic conditions of the Chehalis River included large, broad floodplains with very open conditions. The middle basin, containing the Centralia-Chehalis urban area, consisted of steep glacial plains and rolling, grassy prairie terrain. Continuous riparian cover extended along banks of the Chehalis River, major tributaries and small drainages.

Human land use alters topography, vegetation, geomorphology, and fluvial processes (Bethel 2004), and has been a major influence in the middle Chehalis River basin. Habitat conditions in the basin were significantly altered during the 1920's, 1930's and 1940's when logging activities were most active. According to the Chehalis River Council (2010), existing land use in the

Skookumchuck basin include forestry (70%), agriculture (20%), residential uses (5%), surface mining (3%), and commercial uses (2%). Agricultural uses include dairy farms, tree farms, grazing lands and crop lands. Surface mining in the Skookumchuck basin includes coal, sand and gravel extraction. The Centralia coal mine with its huge open pit on the upper reaches of Hanaford Creek was Washington's largest coal mine. The mined coal was supplied exclusively to the adjacent coal-fired Centralia Power Plant. The mine closed in November 2006 (Seattle Times 2006).

The Washington State Office of Financial Management Forecasting Division (OFM 2010), shows that Lewis County has had much slower recent population growth than surrounding counties. Centralia and Chehalis have shown a decline in population densities. In 2010, the population density for Centralia is 2,090 persons per square mile, while in 1980 the city had a density of 2,222 persons per square mile. Similarly Chehalis has a current population density of 1,570 persons per square mile, while in 1980 the density was 1,649 persons per square mile (OFM 2010).

3.7 Fish and Wildlife

Despite all the pressures over the last century on the Chehalis River system, the mainstem and its tributaries still serve as an important migration corridor, and foraging and spawning habitat for both anadromous and resident salmonids. According to the WDFW Salmon Stock Inventory the middle Chehalis River in the vicinity of the project area supports wild populations of spring and fall-run Chinook (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), and fall chum salmon (*O. keta*), as well as summer and winter steelhead (*O. mykiss*), rainbow (*O. mykiss*), and both sea-run and resident cutthroat trout (*O. clarki clarki*) (WDFW 2008).

Spring Chinook are part of the Chehalis basin stock. They spawn as low as RM 33 on the Chehalis River, but most (over 90%) spawn in the Skookumchuck, Newaukum, and upper Chehalis Rivers (WDOE and WDFW 2004). Spring Chinook enter the Skookumchuck River mid-February through late July, hold in deep pools for several months, then spawn in all suitable portions of the mainstem Skookumchuck up to the dam. Spawning occurs from early September to mid-October with egg incubation from September through February. Fry begin to emerge in January. Chehalis spring Chinook usually outmigrate between July and August of the same year (WDOE and WDFW 2004). Chehalis spring Chinook stock status is classified as healthy (WDFW 2002).

Fall Chinook in the Skookumchuck are also part of the Chehalis basin stock. They do not have a long holding period in the river, but instead enter the river between September and October and spawn in mid-October through early December in all suitable portions of the mainstem up to the dam (WDOE and WDFW 2004). Egg incubation occurs from mid-October through April. Fry begin to emerge in February, rear for around 90 days, and outmigrate between April and mid-August (WDOE and WDFW 2004). Chehalis fall Chinook stock status is classified as healthy (WDFW 2002).

Coho in the Skookumchuck are part of the Chehalis basin stock. They enter the river in early October through late December. Coho spawn in the mainstem and in many tributaries, including Hanaford, Salmon, Johnson, and Thompson Creeks (WDOE and WDFW 2004). Spawning

occurs between early November and late February, peaking in early December. There is also a significant late (potentially wild) spawning component in January/February (WDOE and WDFW 2004). Egg incubation occurs from November through April with fry emergence beginning in February. Coho rear for one year in low gradient wetlands and side channels, outmigrating the following year from mid-February through mid-June. Coho stock status is classified as healthy (SASSI 2002).

Winter steelhead in the Skookumchuck are part of the Skookumchuck/Newaukum stock. Steelhead enter the river between December and early June. Steelhead spawn from mid-February to mid-June in the mainstem, and in Hanaford and Thompson Creeks. Steelhead are trucked to reaches upstream of the dam and spawn all along the mainstem above RM 6 (below the dam), up to the headwaters at RM 38 (WDOE and WDFW 2004). Egg incubation occurs from mid-February through July with fry emergence beginning in April. Most steelhead fry/juveniles rear for 2 years and outmigrate between April and June (WDOE and WDFW 2004). Skookumchuck/Newaukum winter steelhead stock status is classified as healthy (SASSI 2002).

Cutthroat in the Skookumchuck River are part of the Chehalis coastal cutthroat stock. Cutthroat are present in virtually all perennial tributaries and mainstem reaches of the Chehalis system (WDOE and WDFW 2004). They enter the river from October through April. Anadromous cutthroat spawn slightly earlier than the residents, spawning in January through mid-March. Resident cutthroat spawn February through mid-March. Although the status is unknown (SASSI 2000), the stock is believed to be relatively abundant and widely distributed (WDOE and WDFW 2004).

Bull trout/Dolly Varden trout (*Salvelinus confluentus*) have been observed in the Chehalis River/Grays Harbor system in the lower basin. Although a few native char have been collected in the Chehalis River during monitoring studies in recent decades, it is not known if these fish are native to the Chehalis basin or are migrants from other watersheds (USACE 2001). A lack of known barriers to passage suggests that coastal bull trout could occur in the middle Chehalis and Skookumchuck Rivers in the vicinity of the project area (WDFW 1975; WDFW 2008). A combination of factors, including, seasonal fluctuations in water level, relatively high average water temperature, and lack of gravel substrate resulting in poor habitat conditions for bull trout, likely precludes the presence of coastal bull trout in Skookumchuck River.

Vegetated corridors along Skookumchuck River provide habitat for many species of wildlife. Typical species that can be expected to frequent the project area include such mammals as the black-tailed deer, raccoon, skunk, Douglas squirrel, and Townsend's chipmunk; amphibians such as the Pacific chorus frog and ensatina (salamander); reptiles like the common garter snake and the northern alligator lizard; and such birds as osprey, northern flicker, black-capped chickadee, spotted towhee, song sparrow, Bewick's wren, great blue heron, common egret, raven, Canada goose, American crow, magpie, and harp-shinned hawk.

3.8 Sensitive, Threatened and Endangered Species

The coastal Bull trout (*Salvelinus confluentus*) was listed as threatened in November of 1999 (USFWS 1999). Critical habitat was most recently designated effective November of 2010 (USFWS 2010). Critical habitat does not occur in the project vicinity. Bull trout populations have declined throughout much of the species' range; some local populations are extinct, and many other stocks are isolated and may be at risk (Rieman and McIntyre 1993). Combinations

of factors including habitat degradation, expansion of exotic species, and exploitation have contributed to the decline and fragmentation of indigenous bull trout populations.

Coastal bull trout occurrence has been regularly documented in the lower Chehalis River basin, however there are only one to two observations in the lower part of the middle Chehalis, at a distance 22 miles downstream of the Skookumchuck River, and there are no observations within the Skookumchuck River watershed. A native stock of bull trout has not been identified in the Chehalis River/Grays Harbor system however migrant bull trout from other Olympic Peninsula rivers have been caught and tracked in the lower reaches of the Chehalis and Grays Harbor (Jeanes and Morello 2006; USFWS 2009b). A lack of known barriers to passage suggests that coastal bull trout could occur in the middle Chehalis and Skookumchuck Rivers in the vicinity of the project area (WDFW 1975; WDFW 2008). A combination of factors, including, seasonal fluctuations in water level, relatively high average water temperature, and lack of gravel substrate resulting in poor habitat conditions for bull trout, likely precludes the presence of coastal bull trout in Skookumchuck River.

The Chehalis Rivers probably represents the southern end of the range of anadromous char (bull trout/Dolly Varden trout) on the west coast (WDFW 1998; USFWS 2009a and 2009b). Although in its final rule for determination of bull trout as a threatened species, the U.S. Fish and Wildlife Service (USFWS) noted that a subpopulation of native char was reported to occur in the Chehalis River/Grays Harbor basin (USFWS 1999) the most recent evidence suggests there is no current subpopulation and only migrant bull trout from other watersheds use the lower river (USFWS 2009a and 2009b). The Skookumchuck River and the middle and upper Chehalis River reaches are not included in the Critical Habitat designation for Coastal Bull Trout, although the lower Chehalis, Satsop and other lower tributaries are. Based on the most current and comprehensive review, there are no records of bull trout in the middle and upper Chehalis above RM 45 including the Skookumchuck (USFWS 2009a and 2009b).

Recent acoustic telemetry studies indicate that anadromous bull trout, from as far away as the Hoh core area, spend significant time within the Grays Harbor and the lower Chehalis system (Jeanes and Morello 2006). The Satsop River is believed to be the only tributary system within the Chehalis River Basin that likely supported a population of bull trout historically. Native char have been identified through 2-3 historic observations and collections (1974-2000) as far upstream as the confluence of Garrard Creek at RM 45 (Keiser 1990; Brix 1974; Simenstad et al. 2001): the Skookumchuck River joins the mainstem of the Chehalis at RM 67. Although a single char was collected at a smolt trap in 1997 near RM 45 (WDFW 1998), a data record for this fish does not exist so identification of this fish as a native char is questionable (Dave Seiler, WDFW, as cited in Jeanes and Morello 2006).

Although there is no documented bull trout spawning habitat in the upper reaches of the Chehalis River, it is possible the river rarely may be utilized by bull trout larger sub-adults or adults for foraging or over-wintering. No obvious barriers to fish passage are evident limiting fish from entering the upper Chehalis River (WDFW 1975), although high temperatures could be a limiting factor for long-term fish survival. It is generally assumed at this point that bull trout are not present in the middle and upper Chehalis River (WDFW 1998). Others support this conclusion (Mongillo, 1993; Jeanes and Morello 2006; F. Goetz, USACE, pers. comm., 2008).

3.9 Cultural Resources

The area surrounding the project area was traditionally occupied by the Upper Chehalis, the Lower Chehalis, the Cowlitz and the Quinault tribes. The Upper Chehalis, the group most closely identified with the study area, were divided into the *Sclhau-wamph*, the *Qui-yai-axtish*, the *Eelau-wit'sh* and the *'taxc-wa-sin.* The Upper Chehalis depended heavily on fish resources which provided nearly year-round food supplies, with both spring and winter runs. This diet was supplemented by land mammals, sea mammals, shellfish, waterfowl, camas, berries, and root crops. Prairies were maintained by controlled seasonal burning, providing areas for grazing and food gathering. The Upper Chehalis lived in permanent winter villages, moving out in spring, summer and fall to seasonal temporary camps. Winter houses were constructed of split cedar planks; summer lodging was often mobile shelters of reed matting or lean-tos. (Jermann 1983; Nelson 1990; Suttles and Lane 1990; Ruby and Brown 1992; Waterman 2001; Herbel and Schalk 2002).

The Upper and Lower Chehalis, the Chinook, the Quinault, the Queets, the Satsop and the Cowlitz were assembled by Governor Isaac I. Stevens in 1855. The Governor informed the Tribes that a single reservation had been established between the Makah and Grays Harbor Tribes. The Quinault and Quileute signed the Treaty of Olympia in 1855, leaving the remaining tribes without a reserve. The Upper Chehalis and Cowlitz established an informal reservation on the Chehalis River. This reservation was legitimized in 1864. (Herbel and Schalk 2002)

The earliest Europeans, associated with the Hudson's Bay Company (HBC), arrived in the late 1700s and early 1800s. When the area was ceded to the Americans in 1846, the area was opened for settlement. The three rivers (the Chehalis, Cowlitz and Newaukum) provided the primary means of transportation as population expanded rapidly in the area. The lumber industry thrived on the dense woodlands; railroads provided the means to transport the resources out of the region. Chehalis and Centralia served as major stops on the north-south Northern Pacific Railroad runs between Portland, Oregon and Seattle, Washington. The area also supported agricultural and dairy farms (Herbel and Schalk 2002).

Prior land use could have resulted in the presence of National Register of Historic Properties (NRHP) eligible properties within the Area of Potential Effects (APE). USACE archaeologists conducted cultural resources reconnaissance surveys of the APE. The survey team found no observable evidence of surface cultural deposits. There is a potential for intact subsurface deposits to exist under the existing levee footprint.

3.10 Air Quality

Lewis County is part of the Southwest Air Pollution Control Authority (SWAPCA). Air quality standard compliance is monitored on a regional basis by SWAPCA. Lewis County has no SWAPCA regional monitoring stations for air quality. State codes relating to emissions are applicable, and residents and businesses are legally responsible for compliance. The State has developed rules for air quality episode avoidance and restrictions on burning during periods of impaired air quality (City of Chehalis 2003). Chehalis has generally good air quality throughout the year. The Centralia-Chehalis Chamber of Commerce (2008) reported that the area has an average air quality index of 26 compared to a national average of 44.59. However, Pacific

Power and Light Company in Centralia is a local industry that is individually monitored (for SO2, PM VOC, NOx) as a 100-ton point source by SWAPCA. Air pollutants in the Chehalis area are predominantly from industrial sources, open burning, and automobile traffic (City of Chehalis 2003).

3.11 Climate

Indications are that average atmospheric temperatures are trending upward over the previous several decades, and are correlated to increased atmospheric carbon dioxide levels (IPCC 2001). Internal combustion engines emit carbon dioxide (CO_2) as one byproduct of efficient burning of fuel (gasoline or diesel). International efforts are being directed at reducing carbon release into the atmosphere. The University of Washington Climate Impact Group (UWCIG 2008a) predicts warmer, wetter winters for western Washington as one manifestation of global climate change.

3.12 Noise

Sources of noise in the project area include trains traveling along the BNSF railroad tracks near the levee and traffic along N. Pearl Street and 6th Street. Airplane take offs and landings at the Chehalis-Centralia Airport (primary small engine planes and light aircraft) also contribute to noise pollution. Other noise sources include traffic volumes associated commercial shopping centers in the vicinity of the project area. Few private residences are located adjacent to the levee.

3.13 Traffic

Traffic is generally light in this region of small towns; however, sometimes I-5 experiences a high volume of truck traffic. According to the Washington Department of Transportation, average daily traffic volumes between Centralia and Chehalis on I-5 were 60,000-79,999 vehicles per day from 2004 to 2006. In 2004 trucks made up 21% of the total; in 2006 total traffic contribution from trucks was 22% (WSDOT 2004; WSDOT 2006). N. Pearl Street, located immediately adjacent of Skookumchuck River Levee, typically experiences low levels of traffic.

3.14 Socioeconomics

A distinct standard of living differential occurs within the Centralia-Chehalis area, ranging from spacious newly constructed homes to trailer parks and run-down farmhouses. Centralia and Chehalis are becoming “bedroom communities” for commuters to the Olympia area, and commercial growth along the I-5 corridor has been considerable over the past two decades or so. The town of Chehalis features a number of new developments near I-5, including factory outlet stores. However, parts of the valley retain their rural character, and agriculture and logging are still important economically.

4.0 ENVIRONMENTAL EFFECTS OF THE PREFERRED ALTERNATIVE

Throughout this section, the environmental effects of the No-Action Alternative and Preferred Alternative (Repair the Damage) are presented and compared. The preferred alternative would

not result in any impacts to the following resources: basin characteristics/setting, and geology/soils.

4.1 Hydrology

Under the No-Action Alternative, a higher risk of damage from flooding of Skookumchuck River would persist. The current soil conditions and topography would likely not be impacted from their present condition as loss of floodplain.

Under the Preferred Alternative, impacts to geology and soil are expected to be minimal as the repair falls within previously disturbed soils. The proposed work would restore the levee structure to pre-flood conditions and at Station 23+20 to 26+45, expand the landward base of the levee. During construction surface dirt would be scraped off damaged levee areas, reshaped, and then replaced. Additional dirt would be brought in from a local quarry to supplement levee repair materials where needed. In addition, soils would be compacted in areas such as the access roads and the top of the levee where heavy machinery would be operating. Effects on riverine hydrology are anticipated to be minimal. Class III riprap would be placed along approximately 865 feet of the waterward toe of the levee.

4.2 Water Quality

Under the No-Action Alternative, the damaged section of this levee may fail during the upcoming flood season resulting in an increase in turbidity; however increased turbidity is normal during high flow events. Therefore, effects to water quality would be minimal.

Under the Preferred Alternative, there may be water quality impacts such as a minor increase in turbidity during construction. Equipment would not enter the water and would remain on dry ground at all times. Best management practices for construction activities would be employed. There will be no impacts that further worsen the 303(d) listings for the river. As a result the short term effects to water quality would be minimal. No long term effect to water quality would occur.

4.3 Vegetation and Wetlands

Under the No-Action Alternative, it is presumed that herbaceous vegetation would remain intact for the near future. However, assuming the sponsor conducts maintenance to meet USACE's Rehabilitation and Inspection Program eligibility standards for levee vegetation, removal of woody vegetation greater than four inches dbh would occur at periodic intervals.

Implementation of the Preferred Alternative would remove vegetation such as grasses within the construction footprint and/or in places were vegetation removal is essential to execution of the rehabilitation effort. After construction the repaired slopes that are not armored would be hydroseeded with native grass seed mix to prevent erosion after construction. The repair includes construction of a willow lift to be placed just above ordinary high water at each of the two upstream repair locations. Overall, impacts from vegetation removal would be minimal as little vegetation currently overhangs the water or provides shading for the river. Repair work on this levee would not result in the loss of or impact wetlands in the construction areas because no wetlands are found to be present in the project area.

4.4 Floodplains

Under the No-Action Alternative, floodplains adjacent to the project site would be subject to increased likelihood of flooding. This might have the effect of restoring natural floodplain values in the project area, with deposition of sediment, organics, and nutrients. Structures protected by the levees would be at imminent and substantial risk of damage with the start of the ensuing flood season.

Under the Preferred Alternative, the likelihood of flooding would be reduced in areas of the floodplain protected by the damaged levee sections. The proposed action would restore the level of flood protection that had been afforded prior to the December 2007 flood. This would have the effect of reducing natural floodplain function, meaning less long-term deposition of sediments and nutrients, as compared to the No-Action Alternative. It would also mean less likelihood of floodway function, which might otherwise serve to reduce the severity of downriver flooding. Additionally, the presence of dikes and levees in the floodplain helps perpetuate a degraded system by preventing processes such as succession and channel migration that would naturally occur throughout the system.

4.5 Land Use

Under the No-Action Alternative, further damage to levees is possible with future high flows, increasing the risk of flooding, and putting properties at greater risk.

Under the Preferred Alternative, the proposed project would not directly cause any unique effects or impacts to land use, because the levees would be restored to their pre-damage level of protection.

4.6 Fish and Wildlife

Under the No-Action Alternative, no impacts to fish and wildlife would occur beyond those already having taken place through construction of the existing levees and the vegetation maintenance requirements for the non-federal sponsor to remain eligible for the PL84-99 levee repair program. Under the No-Action Alternative, it is presumed that vegetation would remain intact for the near future, and that shrubs and saplings would eventually grow along the bank to shade Skookumchuck River.

Under the Preferred Alternative, the most immediate impact would be a temporary displacement of fish and wildlife due to construction activities. Excavation, transportation, and placement of embankment materials would require the use of heavy construction equipment whose presence and noise may temporarily displace some species at both the borrow pit and construction sites. Currently, construction is scheduled to take place during the appropriate fish window, July 1 to August 31.

Most birds, mammals and other wildlife would be disturbed by construction activities, but would be able to disperse to similar remaining habitat in the vicinity of the project area. Subterranean amphibians, reptiles and small mammals occupying burrows at the levee toes may be lost as a result of ground disturbance and the use of heavy earth-moving equipment. In the project site, which is largely already disturbed compared to undeveloped areas, many wildlife species are relatively tolerant of humans and their activities. Minimal disturbance of aquatic habitat would

occur at the toe of the levee as a result of transitioning from the immediate pre-flood status of a primarily soil-covered riverward slope to an armored riverward slope.

Vegetation removal would be minimal so impacts to fish and wildlife due to vegetation removal are expected to be minor. Vegetation removal by USACE would occur only to access the sites and as necessary to repair the damaged area, and post-construction hydroseeding would compensate for any loss of vegetation. Given the hydroseeding on the landward slope, the minimal amount of vegetation being removed, and in-water work being completed during the approved WDFW construction window, impacts to fish and wildlife by the federal action are expected to be insignificant.

4.7 Sensitive, Threatened and Endangered Species

Under the No-Action Alternative, no impacts to listed species would occur.

Only one species listed as threatened, coastal bull trout potentially occurs in the middle Chehalis River basin, although they are not documented to occur upstream of RM 45 in the mainstem or within the Skookumchuck River watershed. In all likelihood, the rare bull trout that could occur in the river basin would not be impacted because: (1) Skookumchuck River provides poor quality habitat for bull trout, (2) in-water work would occur during periods when the river is typically dry or at extremely low levels, (3) summer high water temperatures would preclude the presence of cold water salmonid species during the proposed construction window, and (4) the project location is outside the known range of the species. Under the Preferred Alternative, the project would have no effect on coastal bull trout and disturbances due to construction and noise would be non-existent. The Skookumchuck River Levee rehabilitation project is expected to have no effect on coastal bull trout or any other sensitive, threatened or endangered species. Therefore, consultation pursuant to Sec. 7 of the Endangered Species Act is not required.

4.8 Cultural Resources

Under the No-Action Alternative, there would be no effect on cultural resources.

USACE has determined that the Preferred Alternative is an undertaking of the type that could affect historic properties and must comply with the requirements of Section 106, as amended through 2004, of the National Historic Preservation Act of 1966, as amended through 2000 (NHPA) (16 USC 470). Section 106 requires that Federal agencies identify and assess the effects of Federal undertakings on historic properties and to consult with others to find acceptable ways to resolve adverse effects. Properties protected under Section 106 are those that are listed or are eligible for listing in the National Register of Historic Places (NRHP). Eligible properties must generally be at least 50 years old, possess integrity of physical characteristics, and meet at least one of four criteria for significance. Regulations implementing Section 106 (36 CFR Part 800) encourage maximum coordination with the environmental review process required by the National Environmental Policy Act (NEPA) and with other statutes. The Washington State Archaeological Sites and Resources Act (RCW 27.53) may also apply.

USACE sent letters to the Chehalis and the Cowlitz Tribes on 04 March 2008 soliciting any knowledge or concerns or religious significance for the APEs. See Appendix B. To date, the

Chehalis Tribe has not responded. The Cowlitz Tribe sent a comment on the Notice of Preparation regarding an inadvertent discovery plan (Appendix C).

Based on archival research, consultation and field investigations, USACE determined that the preferred alternative would result in No Historic Properties Affected, with conditions. USACE determined that construction efforts within the APE should be monitored by a professional archaeologist and that a monitoring report should be submitted to DAHP. The results of the cultural resources survey and USACE's determination were sent to the Washington State Historic Preservation Officer (SHPO) in May 2009. The SHPO responded in May 2009, concurring with USACE' determination. These letters are contained in Appendix B. Under the Preferred Alternative, no impacts to cultural resources are anticipated.

4.9 Air Quality

Under the No-Action Alternative, there would be no effect on air quality. Local and Interstate 5 traffic would continue to be a major and gradually increasing source of emissions, as would industrial sources and scattered sources of wood smoke.

Under the Preferred Alternative, the exhaust from diesel fuel for the trucks and heavy machinery and gasoline for cars would produce a variety of pollutants including carbon dioxide, carbon monoxide, nitrogen and sulfur oxides, hydrocarbons, and unburned carbon particles. However, air quality would meet standards set forth by the State and would not be permanently affected by the construction of the project. During construction, there would be temporary and localized reduction in air quality due to emissions from heavy machinery operating during fill retrieval and delivery, fill placement, and grading.

Equipment such as dump trucks, excavators, dozers would have mufflers and exhaust systems in accordance with State and Federal standards. Any effects to air quality will be short term; only during construction. The project is exempted from the conformity requirements of the CAA because actions taken to repair and maintain existing facilities are specifically excluded from the CAA conformity requirements where the action, as here, would result in an increase in emissions that is clearly *de minimis* (40 CFR § 93.153(c)(2)(iv)). Therefore, impacts would not be significant.

4.10 Climate

Under the No-Action Alternative, gradual climate change would continue, in correlation with increasing CO_2 emissions worldwide.

Nevertheless, diesel fuel consumption by heavy machinery required for construction and repair and gasoline consumption for travel to the sites for all USACE projects, including levee repairs, are a part of world-wide cumulative contributions to change in climate by way of increases in greenhouse gas emission. Furthermore, climate change models in the Pacific Northwest are predicting warmer, wetter winters and dryer summers which may trigger more flooding and frequent maintenance and repair of levees (UWCIG 2008b). However, given the minuscule contribution of CO_2 emissions resulting from this project to overall global emissions, impacts are considered to be insignificant.

4.11 Noise

Under the No-Action Alternative, local noise would continue as before, with train and automotive traffic as the primary sources.

Under the Preferred Alternative, noise levels would increase while construction equipment was operating. Local businesses and the surrounding neighbor may be impacted by noise related to construction or materials transport along N.Pearl Street in Chehalis. However, these effects would be temporary and localized, and would occur only during daylight working hours. As a result, impacts are considered temporary and insignificant.

4.12 Traffic

Under the No-Action Alternative, traffic patterns would remain essentially the same as they currently are, with gradual long-term growth in volumes in the project area.

Under the Preferred Alternative, there would be short-term, insignificant increases in traffic during the course of the 1 month construction period in the area of rehabilitation site. This would consist of movement of equipment to and from the sites, truck traffic hauling materials between sources and the sites, commutes by construction workers, and daily trips between the Seattle metro area and the sites by USACE and possibly City personnel. Distance from each of the project sites to the respective quarries would not generate a significant volume of heavy traffic, as each would be located within Lewis County.

4.13 Environmental Justice

Executive Order 12898, dated February 11, 1994, requires Federal agencies to consider and address environmental justice by identifying and assessing whether agency actions may have disproportionately high and adverse human health or environmental effects on minority or low-income populations.

The No-Action Alternative would increase the risk of flooding to those living in affected floodplains areas. However, although the Skookumchuck River watershed and middle Chehalis River basin are home to minority and low-income populations, there is no evidence that they would be disproportionately affected since the City of Centralia has a lower median household income ($35,064) in comparison to the whole state ($68,457) (US Census Bureau 2011).

The Preferred Alternative would not have a disproportionate or adverse impact on low-income or minority populations, since it would restore pre-existing levels of protection to structures in the floodplain. It is possible that construction would create some economic benefit to the total population, either directly through hiring, or indirectly through local spending by construction personnel, but would not inequitably disadvantage minority or low-income segments of the community.

4.14 Unavoidable Adverse Effects

Unavoidable adverse effects associated with this project include:

(1) minor temporary increases in river turbidity during construction,
(2) temporary and localized increase in noise during construction, which may disrupt wildlife in the area, as well as causing some disturbance to local residents,

(3) temporary and localized disruption of, and increase in, local traffic by construction vehicles,
(4) temporary loss of wildlife habitat due to removal of vegetation within the footprint of the repair, and
(5) transition from the immediate pre-flood status of a primarily soil-covered riverward slope to an armored riverward slope.

4.15 Cumulative Effects

By the 1950s much of the wetland and prairie habitat in the middle Chehalis River basin had been converted to farmland. Since the 1950s there have been continued changes in landscape due to agricultural, commercial, light industrial and suburban development. Most of this farmland falls within the floodplain and is therefore subject to periodic flooding. This flooding provoked the diking of the Chehalis River and its tributaries in the vicinity of Centralia and Chehalis as early as the turn of the century. Additionally, recorded historic settlement activities included land clearing and the removal of jams and large wood from river and creek channels (CBPHWG 2008).

Floodplains near the confluences of the Skookumchuck River, Newaukum River, and Salzer Creek are rated as having "poor" conditions because of extensive bank protection, riprap and channelization (WSCC 2001). Presently 8.1 miles of the 118 miles of the Chehalis River are lined with levees, riprap or revetments, primarily concentrated near the confluences of the Skookumchuck River, Newaukum River, Salzer Creek and the South Fork Chehalis (CBPHWG 2008).

Other floodplain impacts such as channel incision or loss of refuge habitat have been identified in parts of the middle Chehalis River basin, including the Skookumchuck River. The causes of floodplain impacts are poorly documented, but suspected causes include increased sediment transport (leading to channel incision), bank hardening, and filling and draining of wetlands by urbanization and agriculture. The loss of LWD has likely contributed to a loss of side-channel habitat (WSCC 2001). Adjacent land use practices are the major contributor to sedimentation in the Skookumchuck River where sedimentation is likely the product of roads, and livestock access to the river (CBPHWG 2008). The majority of this system, excluding the headwaters, is confined to narrow channels disconnected from the floodplain and devoid of the natural complexity characteristic of alluvial processes and morphology. In addition, continued maintenance of this levee and other levees in the basin by both the Corps and the local municipality, would further constrain rivers in the basin. Additional or rehabilitated levees may create less bank complexity, eliminate benthic invertebrate habitat, increase scarcity of off-channel habitat, increase river speeds during high flow events, further reduce LWD retention and create shorter and thinner riparian corridors, particularly if existing Corps levee vegetation standards are continued. Because of these alterations of the system, the aquatic and terrestrial organisms inhabiting the area, whose life history is dependent upon complex riverine processes, have likely incurred major negative habitat impacts.

Local municipalities are projected to continue recent growth patterns. Housing construction has accelerated in the project area as local towns increasingly serve as "bedroom communities" within the Seattle metropolitan commuting area. This may be moderated by a falling housing

market in the short term. However, in the long term, the effects of growth are expected to be exacerbated by encouragement of floodplain development which is facilitated by levee repair unless County controls are implemented to check this development. The incremental effect of the levee repair projects is not clear. However the development-inducing effect of approximately 865 linear feet of levee repair is not expected to significantly contribute to overall development in the middle Chehalis River basin region.

Overall, contributions to cumulative environmental impacts as a result of the Skookumchuck River Levee rehabilitation project are expected to be insignificant.

5.0 COMPLIANCE WITH LAWS, REGULATIONS AND EXECUTIVE ORDERS

5.1 Federal Statutes

5.1.1 American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 (AIRFA) (42 U.S.C. 1996) establishes protection and preservation of Native Americans' rights of freedom of belief, expression, and exercise of traditional religions. Courts have interpreted AIRFA to mean that public officials must consider Native Americans' interests before undertaking actions that might impact their religious practices, including impact on sacred sites.

No alternative is expected to have any effect upon Native Americans' rights of freedom of belief, expression, and exercise of traditional religions.

5.1.2 Bald and Golden Eagle Protection Act (BGEPA)

The BGEPA (16 U.S.C. 668-668d) prohibits the taking, possession or commerce of bald and golden eagles, except under certain circumstances. Amendments in 1972 added to penalties for violations of the act or related regulations.

No take of either bald or golden eagles is likely through any of the actions discussed in this EA since there are no known nests near any of the work locations.

5.1.3 Clean Air Act

The Clean Air Act (CAA) (42 U.S.C. 7401 et seq.), amended in 1977 and 1990, was established "to protect and enhance the quality of the nation's air resources so as to promote public health and welfare and the productive capacity of its population." The CAA authorizes the EPA to establish the National Ambient Air Quality Standards to protect public health and the environment. The CAA establishes emission standards for stationary sources, volatile organic compound emissions, hazardous air pollutants, and vehicles and other mobile sources. The CAA also requires the states to develop implementation plans applicable to particular industrial sources.

This EA analyzes effects on air quality from the Preferred Alternative; effects would be minimal, the project is exempted from the conformity requirements of the CAA because it would not exceed *de minimis* levels of emissions.

5.1.4 Coastal Zone Management Act

Under the Coastal Zone Management Act of 1972 (16 USCA 1451-1465), Sec. 307(c)(1)(A), "[e]ach Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs."

The project is outside the reach of the Coastal Zone Management Act (CZMA) because Lewis County is outside of the coastal zone. Because Lewis County is outside Washington's coastal zone and the project is not expected to have impacts on the uses or resources of the coastal zone, a Coastal Zone Consistency Determination is not required as part of the preferred alternative.

5.1.5 Endangered Species Act

The ESA (16 U.S.C. 1531-1544), amended in 1988, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat upon which they depend. Section 7(a) of the ESA requires that Federal agencies consult with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy their critical habitats.

The EA, and embedded language on effects determinations concerning species listed under the Endangered Species Act, addresses potential effects on those species and their designated critical habitat. The project would have no effect on coastal bull trout or its critical habitat. Therefore, consultation pursuant to Sec. 7 of the Endangered Species Act is not required.

5.1.6 Federal Water Pollution Control Act

The Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) is more commonly referred to as the Clean Water Act (CWA). This act is the primary legislative vehicle for Federal water pollution control programs and the basic structure for regulating discharges of pollutants into waters of the United States. The CWA was established to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA sets goals to eliminate discharges of pollutants into navigable waters, protect fish and wildlife, and prohibit the discharge of toxic pollutants in quantities that could adversely affect the environment.

USACE concludes that the project is functionally analogous to Nationwide Permit (NWP) 3 pursuant to Section 404 of the Clean Water Act. NWP 3 addresses the repair, rehabilitation, or replacement of a currently serviceable water control structure, provided that the structure is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. The project would replace soil with riprap on the riverward levee

face within the original footprint. The environmental coordinator consulted a project manager in the Corps Regulatory Branch, who concurred that considering the change in material to constitute no more than a minor deviation would be fully consistent with application of NWP 3 to a typical permit applicant. Furthermore, USACE has analyzed the project pursuant to the general conditions established by the State associated with authorization under NWP 3, and concluded that the proposed repair project satisfies those conditions; thus, extension of the State's general water quality certification under Section 401 of the Clean Water Act is fully justified. USACE has provided Ecology the opportunity to review the determination that the general certification applies by functional analogy. Ecology has determined that the general water quality certification associated with NWP 3 covers this project, and that individual water quality certification is thus not required. (Refer to Appendix D). The USACE prepared a 404(b)(1) Evaluation (Appendix E).

5.1.7 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), (16 U.S.C. 1801 et. seq.) requires Federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). The objective of an EFH assessment is to determine whether or not the proposed action(s) "may adversely affect" designated EFH for relevant commercial, federally-managed fisheries species within the proposed action area. The assessment also describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the proposed action.

Under the Magnuson-Stevens Fishery Conservation and Management Act, effects on Essential Fish Habitat (EFH) must be addressed for certain species which may be found in the project area. In this case, the only EFH species is coho salmon (NMFS 2008; WDFW undated).

Under the No-Action Alternative, a potential increase in sediment could occur from erosion of the banks, if a flood event were to scour away the remaining riprap. Increased sediment into the river could affect the quality of habitat; however, this is a natural process that occurs during flood events within a river system. Therefore, minimal effects to essential fish habitat (EFH) would result from the No-Action Alternative.

Under the Preferred Alternative, construction activities would have temporary and localized impacts on fish habitat. Turbidity may increase during the in-water portion of the work. Best management practices would be employed during the construction process to minimize the impact on fish and their habitat. Noise and vibration effects would be temporary and not significant.

Upon project completion, features of essential habitat would return to pre-construction status or may be slightly enhanced. Substrate composition, water quality (e.g. dissolved oxygen, nutrients, temperature, etc.), water quantity, depth, velocity, channel gradient, stability, space, access and passage, and flood plain and habitat connectivity would return to pre-construction status. Based on these factors, the project would not reduce the quality or quantity of EFH for Pacific salmon in the long term. Therefore, no adverse effects to EFH would occur.

5.1.8 National Environmental Policy Act (NEPA)

NEPA (42 U.S.C. 4321 et seq.) requires that Federal agencies consider the environmental effects of their actions. It also requires that an EIS be included in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The EIS must provide detailed information regarding the proposed action and alternatives, the environmental impacts of the alternatives, appropriate mitigation measures, and any adverse environmental impacts that cannot be avoided if the proposal is implemented. Agencies are required to demonstrate that these factors have been considered by decisionmakers prior to undertaking actions. Major Federal actions determined not to have a significant effect on the quality of the human environment are evaluated through an EA.

A Notice of Preparation was posted for a 30-day comment period that began 29 June 2009 and ended 29 July 2009; one comment letter was received. This comment letter was received from the Cowlitz Indian Tribe dated 23 July 2009 and can be found in Appendix C along with USACE response. The signed Finding of No Significant Impact (FONSI) is included in Appendix D. This Final EA and signed FONSI satisfy the documentation requirements of NEPA.

5.1.9 National Historic Preservation Act

Section 106 of the NHPA (16 U.S.C. 470) requires that Federal agencies evaluate the effects of Federal undertakings on historical, archeological, and cultural resources and afford the Advisory Council on Historic Preservation opportunities to comment on the proposed undertaking. The lead agency must examine whether feasible alternatives exist that would avoid eligible cultural resources. If an effect cannot reasonably be avoided, measures must be taken to minimize or mitigate potential adverse effects.

An evaluation was conducted, and is referenced in this document. Coordination has taken place with affected tribes and with the Washington Deptartment of Archaeology and Historic Preservation (DAHP). USACE prepared a Section 106 compliance report and submitted it on 18 May 2009 to the Washington State Historic Preservation Officer (SHPO), requesting that the SHPO concur with a determination of “No Historic Properties Affected [with Conditions]” for the Skookumchuck River levee rehabilitation project. USACE has recommended archaeological monitoring at Skookumchuck River Levee. In a letter dated 20 May 2009 the SHPO concurred with USACE’ determination. See Appendix B.

At the completion of the project, a letter report would be submitted to the Washington SHPO outlining the results of the monitoring, to complete the Section 106 process.

5.2 Executive Orders

5.2.1 Executive Order 11990, Protection of Wetlands

Executive Order 11990 encourages Federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. No wetlands would be affected by the proposed action.

5.2.2 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898, dated February 11, 1994, requires Federal agencies to consider and address environmental justice by identifying and assessing whether agency actions may have disproportionately high and adverse human health or environmental effects on minority or low-income populations. Disproportionately high and adverse effects are those effects that are predominantly borne by minority and/or low-income populations and are appreciably more severe or greater in magnitude than the effects on non-minority or non-low income populations.

As addressed in Section 4.13, no disproportionate adverse effects on minority or low income populations will occur as a result of the proposal.

6.0 CONCLUSION

Based on this assessment, the proposed actions are not expected to result in significant adverse environmental impacts. The proposed action is not considered a major Federal action having a significant impact on the quality of the human environment and does not require preparation of an environmental impact statement.

7.0 REFERENCES

Brix, R. 1974. 1974 data report of juvenile salmonid seining in Grays harbor and tributary rivers and electro-fishing and river seining in the Chehalis River in the vicinity of Washington Public Power Supply System's project nos. 3 and 5. State of Washington Department of Fisheries, Olympia, Washington.

CBPHWG (The Chehalis Basin Partnership Habitat Work Group). 2008. The Chehalis Basin Salmon Habitat Restoration and Preservation Work Plan for WRIA 22 and 23. http://www.co.grays-harbor.wa.us/info/pub_svcs/ChehalisBasin/Docs/WRIA20080922-23.pdf Accessed 10 December, 2008.

Chehalis River Council. 1992. Chehalis River Basin Action Plan for the identification and control of non-point source pollution & technical supplement. Chehalis River Council, Lewis County Conservation District and Washington Dept. of Ecology. Chehalis, WA.

Chehalis River Council. 2010. Skookumchuck River Website. Online at http://www.crcwater.org/actplan/04skook.html. Accessed 29 December 2010.

City of Chehalis. 2003. Comprehensive Plan and Final Environmental Impact Statement. Chehalis, Washington. Amended June 23, 2003 (Ordinance # 750-B). Cited from Chapter 2: Natural Environment Element (1999) Davis Evans and Associates, Inc.

Envirovision. 2000. Detailed Summary of the Chehalis Basin Level 1 Assessment. Prepared by Envirovision in association with WPN and SAIC for the Chehalis Basin Partnership. Grays Harbor County, December 2002. www.co.grays-harbor.wa.us

Fraley, J.J. and B.B. Shepard. 1989. Life history, ecology, and population status of migratory bull trout (*Salvelinus confluentus*) in the Flathead Lake and River drainage, Montana. Northwest Science 63:133-143.

Goetz, F. 2008. Personal communication with Fred Goetz, USACE, Environmental Resources Section, Seattle District. Comments and input into this draft document. November 2008.

Herbel, B. and R. Schalk. 2002. An Archaeological Reconnaissance of the Chehalis River Floodplain for the Centralia Flood Damage Reduction Project, Washington. Report prepared by Cascadia Archaeology for Seattle District, U.S. Army Corps of Engineers, Contract Number DACA67-99-D-1014.

IPCC (Intergovernmental Panel on Climate Change). 2001. Climate Change 2001: Working Group I: The Scientific Basis. World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP). Online at http://www.ipcc.ch/ipccreports/tar/wg1/001.htm. Accessed 27 Oct 2008.

Jeanes, E. and C.M. Morello. 2006. Native char utilization, lower Chehalis River and Grays Harbor estuary, Aberdeen, Washington. Prepared for U.S. Army Corps of Engineers, Seattle District by R2Resource Consultants, Redmond, Washington.

Jermann, Jerry 1983. Archaeology management Plan: Centralia Mine. Report prepared by the Office of Public Archaeology (UW-Seattle) for the Washington Irrigation and Development Company, Centralia, Washington.

Keizer, L., ed. 1990. Henning's Washington fishing guide. Helstrom Publications, Inc. Portland, Oregon. Cited in USFWS 2009b.

Mongillo, P.E. 1993. The distribution and status of bull trout/Dolly Varden in Washington. Washington Department of Wildlife, Fisheries Management Division, Olympia, WA. Report 93-22.

Nelson, Charles M. 1990. Prehistory of the Puget Sound Region. In *Northwest Coast*, edited by Wayne Suttles, pp. 481-484. *Handbook of North American Indians*, Vol. 7, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

NMFS (National Marine Fisheries Service). 2008. Fisheries Off West Coast States; West Coast Salmon Fisheries; Amendment 14; Essential Fish Habitat Descriptions for Pacific Salmon. Federal Register 73(200):60987-60994.

NRCS (Natural Resources Conservation Service). 20010. U.S. Department of Agriculture Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed 29 December 2010.

OFM (Washington State Office of Financial Management, Forecasting Division). 2010. Population Density information. Available online at: http://www.ofm.wa.gov/pop/popden/default.asp. Accessed 30 December 2010.

Reichmuth, D.R., A.S. Potter, and J.B. Motranga. 1998. The Geomorphic Development of the Chehalis River Basin, Lewis County, Washington. Geomax. Letter prepared for Lewis County Washington. (not seen; cited in [Herbel and Schalk 2002])

Ruby, R.H., and J.A. Brown. 1992. A Guide to the Indian Tribes of the Pacific Northwest, Revised Edition. University of Oklahoma Press, Norman and London.

Seattle Times. 2006. "Time conspired against the Centralia coal mine" Published Friday, 1 December 2006. Available online at: http://seattletimes.nwsource.com/html/localnews/2003456290_coalside01m.html. Accessed 30 December 2010.

Smith, C.J. and M. Wenger. 2001. Salmon and Steelhead Habitat Limiting Factors. Chehalis Basin and nearby drainages, Water Resourse Inventory Areas 22 and 23. Washington State Conservation Commmission Final Report May 2001. Available online at: http://www.co.grays-harbor.wa.us/info/pub_svcs/Lead_Entity/library/LFAv2.pdf. Accessed 29 December 2010.

Snavely, P.D.,Jr., R.D. Brown, Jr., A.E. Roberts, and W.W. Rau. 1958. Geology and Coal Resources of the Centralia-Chehalis District, Washington. USGS Bulletin 1053. (not seen; cited in [Herbel and Schalk 2002])

Suttles, W., and B. Lane. 1990. Southern Coast Salish. pp. 485-502 *in* W. Suttles, ed.: Northwest Coast. Handbook of North American Indians, Vol. 7, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

USACE (US Army Corps of Engineers). 2001. Grays Harbor native char – a literature review. Prepared by the U.S. Army Corps of Engineers for the Grays Harbor Navigation Project. Seattle District, Seattle, Washington.

US Census Bureau. 2011. American Fact Finder. Online at: http://factfinder.census.gov/home/saff/main.html?_lang=en. Accessed on 6 May 2011.

USFWS (US Fish and Wildlife Service). 1999. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for Bull Trout in the Coterminous United States: Final Rule. 50 FR 589110-58933.

USFWS (US Fish and Wildlife Service). 2008. Online Wetlands Mapper. http://wetlandsfws.er.usgs.gov/NWI/index.html. Accessed 12 Feb 2008.

USFWS (US Fish and Wildlife Service). 2009a. Bull trout proposed critical habitat justification: rationale for why habitat is essential, and documentation of occupancy. Idaho Fish and Wildlife Office, Boise, Idaho, Pacific Region, Portland, Oregon. Main report and Appendices.

USFWS (US Fish and Wildlife Service). 2009b. Bull trout proposed critical habitat justification: rationale for why habitat is essential, and documentation of occupancy: Appendix 2 – Water body segments proposed as critical habitat for bull trout, including documentation of occupancy and site-specific rationale. Pacific Region, Portland, Oregon.

USFWS (US Fish and Wildlife Service). 2010. Revised designation of critical habitat for bull trout in the coterminous United States; Final rule. 70 FR 63898-64070.

USGS (US Geological Survey). 2008. Real-Time Data for Washington Streamflow. Online at http://waterdata.usgs.gov/wa/nwis/current?type=flow&group_key=NONE Accessed 24 November 2008

UWCIG (University of Washington Climate Impact Group). 2008a. Joint Institute for the Study of the Atmosphere and Ocean (JISAO). Online at: http://cses.washington.edu/cig/pnwc/pnwc.shtml. Accessed 26 November 2008.

UWCIG (University of Washington Climate Impacts Group). 2008b. Climate Change Scenarios. Online at: http://cses.washington.edu/cig/fpt/ccscenarios.shtml Accessed 11 February 2008.

Washington Department of Ecology(WDOE) and Washington Department of Fish and Wildlife. 2004. Chehalis River Basin, WRIAs 22 and 23, Fish Habitat Analysis Using the Instream Flow Incremental Methodology. Open File Technical Report 04-11-006.

Washington Department of Ecology (WDOE). 2011. Water Quality Assessment map tool for Washington. Found at: http://apps.ecy.wa.gov/wqawa2008/viewer.htm. Accessed 04 April 2011

WDFW (Washington Department of Fish and Wildlife). 1975. A Catalog of Washington Stream and Salmon Utilization, Vol. 2 Coastal Region. Olympia, WA.

WDFW (Washington Department of Fish and Wildlife). (undated). Salmonscape. Online at http://fortress.wa.gov/dfw/gispublic/apps/salmonscape/default.htm. Accessed 12 April 2011.

WDFW (Washington Department of Fish and Wildlife). 1998. Washington State Salmonid Stock Inventory (SaSI): Bull Trout/Dolly Varden Volume. Olympia, Washington. http://wdfw.wa.gov/fish/sasi/ Accessed 25 November 2008.

WDFW (Washington Department of Fish and Wildlife). 2002. Washington State Salmonid Stock Inventory (SaSI). Olympia, Washington. http://wdfw.wa.gov/fish/sasi/ Accessed 11 Feb 2008.

WSCC (Washington State Conservation Commission). 2001. Salmon and Steelhead Habitat Limiting Factors: Chehalis Basin and Nearby Drainages Water Resources Inventory Areas 22 and 23. Final Report. Lacey, WA

WSDOT (Washington State Department of Transportation). 2004. Annual Traffic Report. http://www.wsdot.wa.gov/mapsdata/tdo/PDF_and_ZIP_Files/Annual_Traffic_Report_2004.pdf. Accessed 29 October 2008.

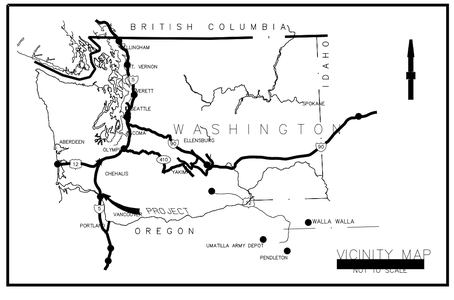
WSDOT (Washington Department of Transportation.) 2006. Annual Traffic Report. Online at http://www.wsdot.wa.gov/mapsdata/tdo/PDF_and_ZIP_Files/Annual_Traffic_Report_2006.pdf. Accessed 29 October 2008.

Appendix A: Project Drawings

This page was intentionally left blank to facilitate double-sided copying.

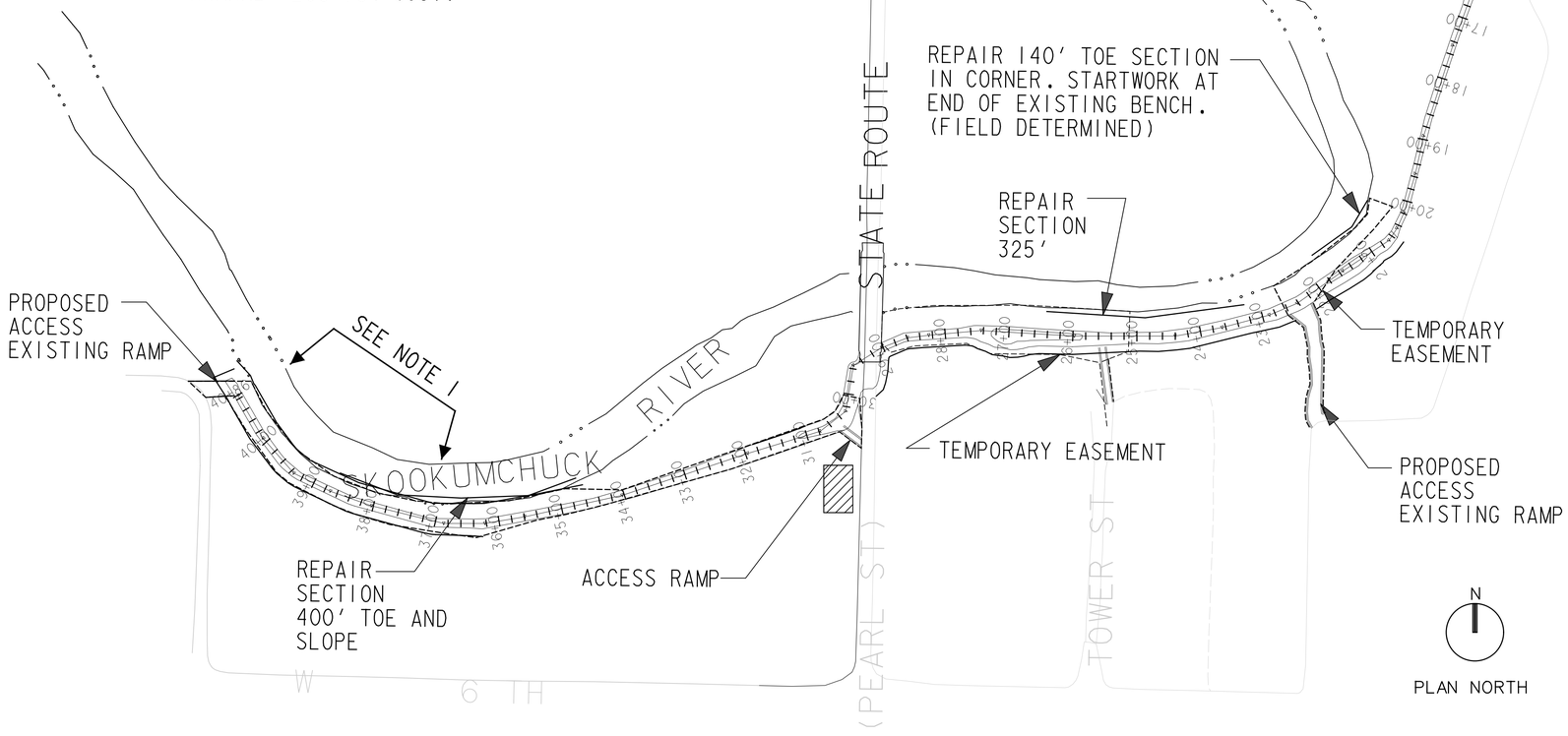
LEGEND

----------	TEMPORARY CONSTRUCTION EASEMENT FROM ACCESS RAMP ON TOWER STREET. PERMANENT CONSTRUCTION EASEMENT FROM EXISTING LANDWARD TOE TO RIVERWARD PRE-FLOOD TOE OF EXISTING LEVEE FOOTPRINT BETWEEN STATIONS 20+20 AND 21+60. REPAIR LEVEE SLOPES RIVERWARD AND LANDWARD BETWEEN STATIONS 34+60 AND 37+85. TEMPORARY ACCESS FROM TOWER STREET. PERMANENT EASEMENT FROM EXISTING LANDWARD TOE TO EXISTING PRE-FLOOD RIVERWARD TOE. REPAIR LEVEE RIVERWARD SLOPE AND TOE FROM STATION 34+40 TO 38+40. TEMPORARY ACCESS AND CONSTRUCTION EASEMENT FROM PEARL STREET. PERMANENT EASEMENT FROM EXISTING LANDWARD TOE TO PRE-FLOOD EXISTING RIVERWARD TOE
═══	PERMANENT CONSTRUCTION LIMITS BETWEEN TOE ON LANDWARD SIDE AND TOE ON CREEKWARD SIDE
═══	ACCESS RAMPS
▨	PROPOSED STAGING AREA

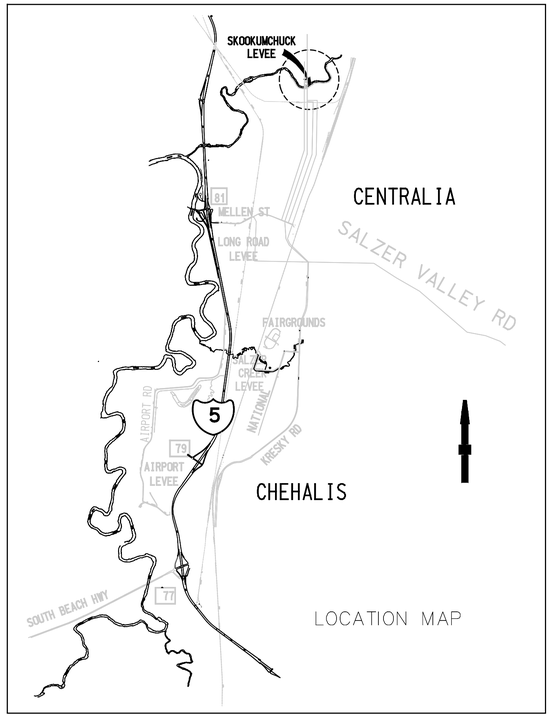


NOTE:

1. EMBANKMENT EXCAVATION BETWEEN STATIONS 37+00 AND 40+86 TO BE MONITORED BY CORPS ENVIRONMENTAL SPECIALIST. (POC: KARA KKANABY 206-764-6857)



SKOOKUMCHUCK LEVEE SITE PLAN



US Army Corps of Engineers
Seattle District

Symbol	Description	Date	Appr.	Symbol	Description
		/ /			

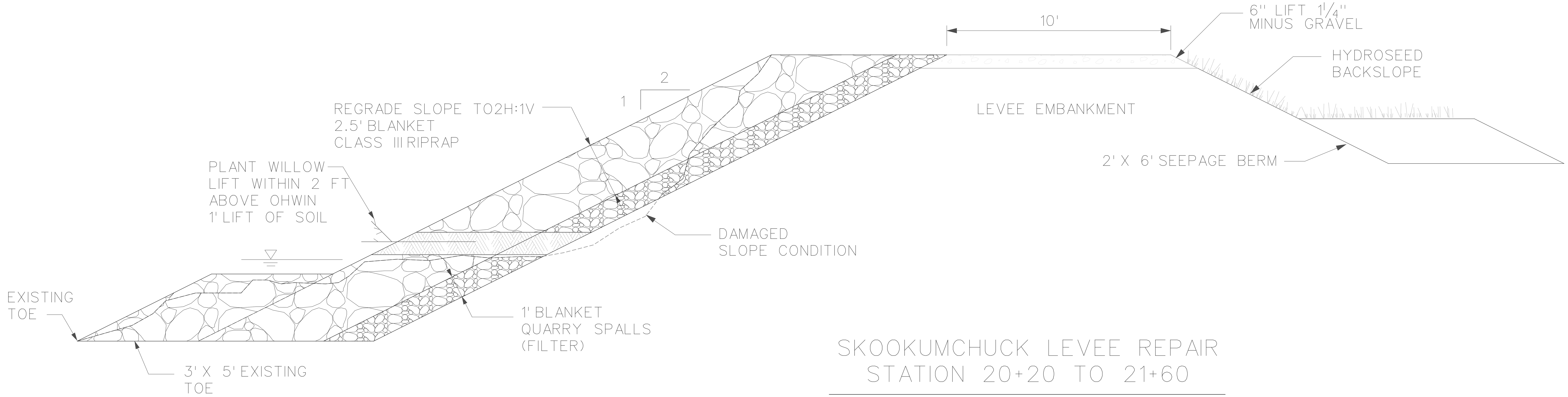
Designed by: DESJARDIN
Drawn by: DESJARDIN
Checked by:
Date: 9 DEC 08
File #: EC-DB-CS
Rev.

U.S.ARMY ENGINEER DISTRICT,SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON
Prepared by:

PL84-99 REHABILITATION & INSPECTION PROGRAM
2008 LEVEE REPAIRS
SKOOKUMCHUCK LEVEE
SITE PLAN - LOCAITON
& VICINITY MAPS
LEWIS COUNTY WA

Plate number:
C-101
Sheet 1 of 4

DATE AND TIME PLOTTED: 5/3/2011 12:44:17 PM DESIGN FILE: I:\MISC\CIV\CHEHALIS\2008 LEVEE REPAIRS\SKOOKUMCHUCK C-101.DGN



SKOOKUMCHUCK LEVEE REPAIR
STATION 20+20 TO 21+60

NOTES:

1. EXCAVATE LEVEE AND REWORK EXISTING BANK TO RE-ESTABLISH 3' X 5' TOE. PLACE FILTER BLANKET ON SLOPE, COVER WITH 2.5' BLANKET OF CLASS III RIPRAP. CREATE 2' X 6' SEEPAGE BERM ON BACKSLOPE. PLACE ENOUGH FILL IN LEVEE TO REPLACE LOST EMBANKMENT MATERIAL AS LEVEE TENDS TO SEEP. WHEN CONSTRUCTION IS COMPLETE, PLACE 6" LIFT OF 1¼" MINUS CRUSHED GRAVEL ON LEVEE CROWN AND ACCESS ROAD. HYDROSEED BACKSLOPE AND DISTURBED AREAS.

2. PLANT WILLOWS ON 6" CENTERS IN 1' LIFT OF SOIL WITHIN 2 FT ABOVE OHW AS SHOWN.

3. EXCAVATION INTO EMBANKMENT, CLEARING AND GRUBBING FOR SEEPAGE BERM TO BE OBSERVED BY A CORPS ENVIRONMENTAL SPECIALIST. (POC'S: KARA KANABY 206-764-6857).

US Army Corps of Engineers
Seattle District

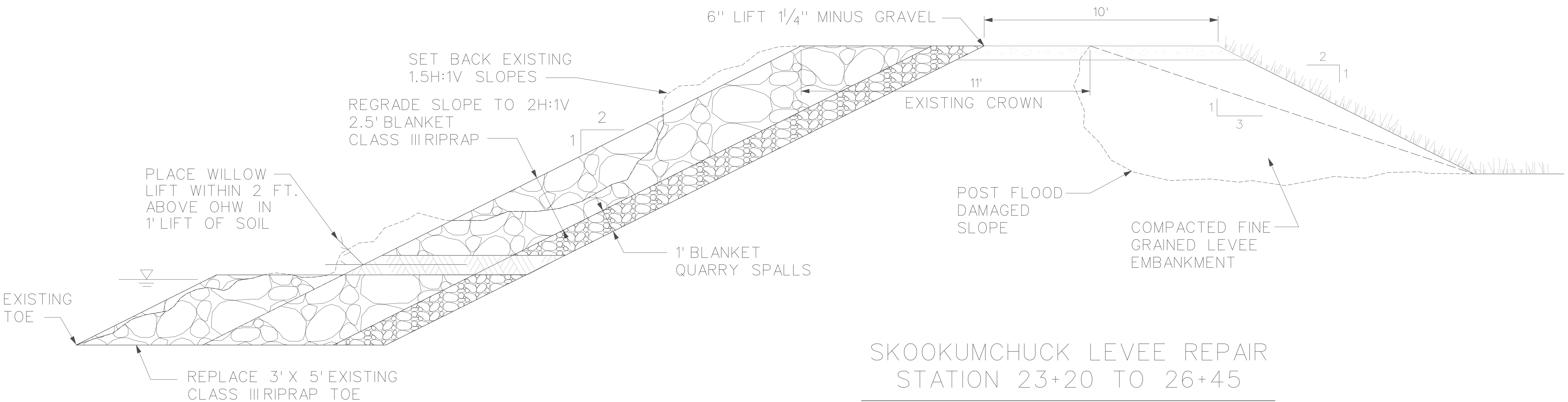
Designed by: DESJARDIN | Date: 9 DEC 08
Drawn by: LEJON | File: EC-DB-CS
Checked by: | Rev.

U.S. ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON
Prepared by: EC-DB-CS

PL84-99 REHABILITATION & INSPECTION PROGRAM
2008 LEVEE REPAIRS
SKOOKUMCHUCK
CROSS SECTIONS
STATION 20+20 TO 21+60
LEWIS COUNTY WA

Plate number:
C-102
Sheet 2 of 4

DATE AND TIME PLOTTED: $$$DATE$$$ $TIME DESIGN FILE: $$$DGN$$$



SKOOKUMCHUCK LEVEE REPAIR
STATION 23+20 TO 26+45

NOTES:

1. CLEAR AND GRUB LEVEE. CITY IS RESPONSIBLE FOR DISPOSING OF DEBRIS. REPLACE DAMAGED TOE AS NECESSSARY. EXCAVATE LEVEE EMBANKMENT ON LANDWARD SIDE TO SOLID FOUNDATION. REPLACE MATERIALPER EM 1110-2-1913, CH. 7, TABLE 7.2, CATEGORY II. PLACE 6" LIFT GRAVEL ON LEVEE CROWN AND RAMP. HYDROSEED DISTURBED AREAS

2. PLANT WILLOWS ON 6" CENTERS IN 1' LIFT OF SOIL AS SHOWN.

3. EXCAVATION INTO EMBANKEMNENT, CLEARING AND GRUBBING TO BE MONITORED BY A CORPS ENVIRONMENTAL SPECIALIST. (POC: KARA KANABY 206-764-6857).

US Army Corps of Engineers
Seattle District

Symbol | Description | Date | Appr.

Designed by: DESJARDIN
Drawn by: LEJON
Checked by:
Date: 9 DEC 08
File: EC-DB-CS
Rev.

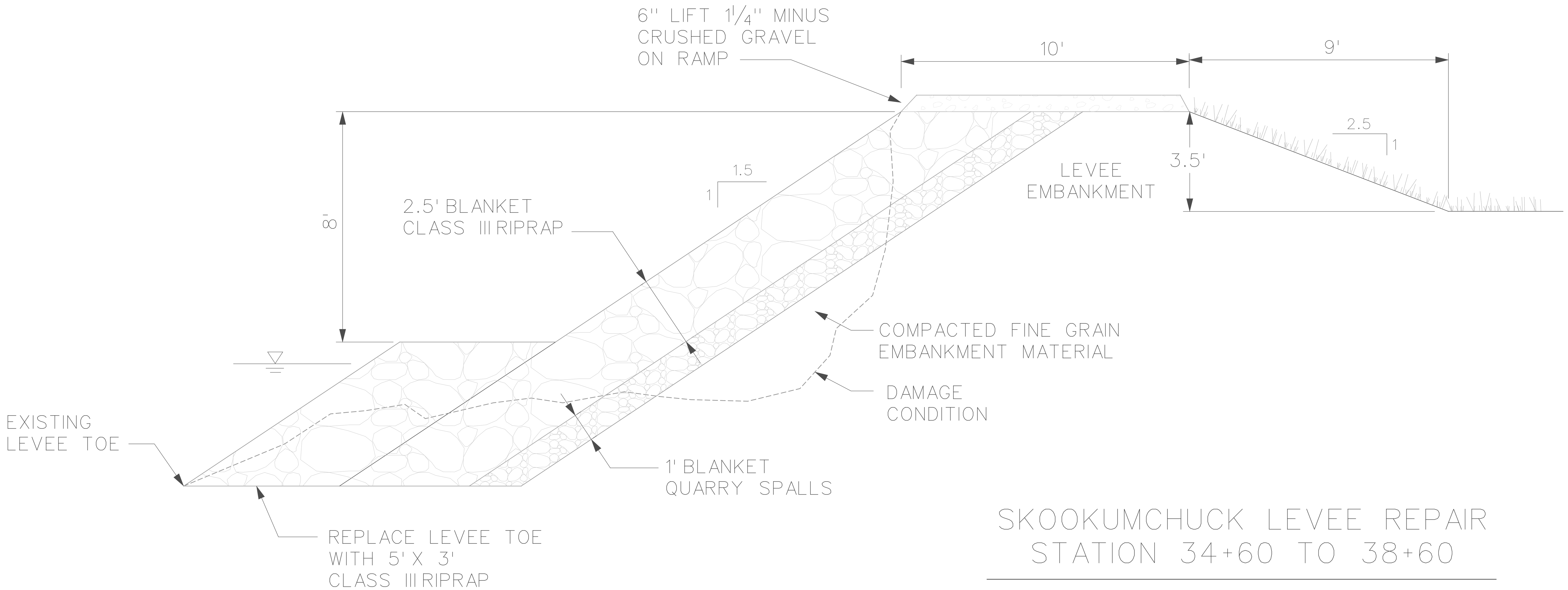
U.S. ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON
Prepared by: EC-DB-CS

PL84-99 REHABILITATION & INSPECTION PROGRAM
2008 LEVEE REPAIRS
SKOOKUMCHUCK
CROSS SECTIONS
STA 23+20 TO 26+45
LEWIS COUNTY WA

Plate number:
C-103
Sheet 3 of 4

DATE AND TIME PLOTTED: $$DATE$$$ $TIME DESIGN FILE: $$DGN$$$

IF SHEET MEASURES LESS THAN 22" X 34" IT IS A REDUCED PRINT. REDUCE SCALE ACCORDINGLY.



SKOOKUMCHUCK LEVEE REPAIR
STATION 34+60 TO 38+60

NOTES:

1. CLEAR AND GRUB SITE PRIOR TO CONSTRUCTION. EXCAVATE AND REWORK AS NECESSARY TO RE-ESTABLISH LEVEE TO RIVERWARD SLOPE. PLACE FINE GRAINED FILL AND COMPACT; COVER WITH 1' BLANKET QUARRY SPALLS AND THEN COVER WITH ARMOR PROTECTION ON RIVERWARD SLOPE.

2. CLEARING, GRUBBING, AND EXCAVATION INTO EMBANKMENT MUST BE OBSERVED BY A CORPS ENVIRONMENTAL SPECIALIST. (POC: KARA KANABY 206-764-6857).

IF SHEET MEASURES LESS THAN 22" X 34" IT IS A REDUCED PRINT. REDUCE SCALE ACCORDINGLY.

US Army Corps of Engineers
Seattle District

Designed by: DESJARDIN
Drawn by: LEJON
Checked by:
Date: 9 DEC 08
File: EC-DB-CS
Rev.

U.S.ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON
Prepared by: EC-DB-CS

PL84-99 REHABILITATION & INSPECTION PROGRAM
2008 LEVEE REPAIRS
SKOOKUMCHUCK
CROSS SECTIONS
STATION 34+60 TO 38+60
LEWIS COUNTY WA

Plate number: C-104

DATE AND TIME PLOTTED: $$$DATE$$$ $TIME DESIGN FILE: $$$DGN$$$

Skookumchuck C-104.dgn 5/3/2011 1:11:14 PM

Appendix B: Tribal and SHPO Coordination

This page was intentionally left blank to facilitate double-sided copying.

USACE letters to Chehalis and Cowlitz

dated 04 March 2008

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Environmental Resources Section

MAR 04 2008

Richard Bellon
Confederated Tribes of the Chehalis Reservation
POB 536
Oakville, WA 98568

SUBJECT: Request for knowledge of, or concerns with, Historic Properties for proposed levee rehabilitation at four locations in and near Centralia and Chehalis, Lewis County, Washington.

Dear Mr. Bellon:

In December 2007 rainfall and snowmelt resulted in a 150-200 year peak flooding event on the Chehalis River in Lewis County, Washington. During this event, four federal and non-federal levees in and around Centralia and Chehalis sustained damage in the form of breaches, backslope erosion, and sloughing. These damaged levees include sections of the Skookumchuck River levee in Centralia, the federal Long Road Levee, the Salzar Creek Levee, and the Chehalis-Centralia Airport Levee.

In cooperation with their local sponsors, the U.S. Army Corps of Engineers, Seattle District (Corps) is currently considering a range of restorative actions including, but not limited to, minor repair of damaged levee surfaces to restore levees to pre-flood conditions, widening the levee bases on the riverward and/or landward sides to decrease the width to height ratio, and complete removal and repair of breached or damaged sections. Repairs limited to the existing levee prisms are unlikely to encounter intact archaeological deposits but the Corps has determined that some of the proposed levee repair work, such as that associated with levee expansion or complete removal of a levee prism to the prior grade prior to replacement, do have the potential to affect historic properties eligible for listing in the National Register of Historic Places (NHPA) if they exist within the project's area of potential effects or APE. This is especially true for proposed repairs to levees on or near documented archaeological sites as those located near the Chehalis Airport levee (45LE116, 179, 185, 187, 190, and 511) and the Skookumchuck levee (45LE193). The Long Road Levee APE was subjected to a professional archaeological survey with subsurface testing prior to construction of this federal project in 1995. The Salzer Creek Levee APE was subjected to a professional archaeological surface survey in 1977 that did not include subsurface testing.

Prior to levee rehabilitation construction a Corps, or contracted archaeologist, will survey the damaged areas to determine if there is a potential for the proposed repairs to cause effects to historic properties. If the archaeologist determines that the proposed work has a potential to cause effects then archaeological testing if possible, or monitoring during certain phases of construction may be necessary. National Historic Preservation Act (NHPA) Section 106

compliance reports will be prepared. The reports will include the findings of the investigations for each repair site, recommendations for archaeological monitoring during construction (if any), and a recommended determination of effects to historic properties. If archaeological monitoring is recommended at some repair locations, the report will include a monitoring plan and protocols to be followed. The protocols will include an inadvertent discovery clause that will apply when an archaeological monitor is not present. The Corps' determinations of effects to historic properties, a report on the result of the investigations, and monitoring plan (if necessary) will be concurred with by the DAHP and reviewed by the Upper Skagit Tribe prior to the start of construction.

To further identify historic properties, Section 106 of the National Historic Preservation Act (NHPA or the Act) of 1966, as amended (36 CFR 800.4[a][3]), requires Federal agencies to seek information from tribes likely to have knowledge of, or concerns with, historic properties within the project's APEs. We are specifically seeking assistance in identifying properties that may be of religious or cultural significance and may be eligible for the National Register of Historic Places (NRHP), including Traditional Cultural Properties (TCP). Specific guidance concerning the Corps' obligation to contact your tribe regarding this issue is found at 36 CFR 800.4(a)(4), which states that the agency official shall:

> (4) Gather information from any Indian tribe or Native Hawaiian organization identified pursuant to Sec. 800.3(f) to assist in identifying properties, including those located off tribal lands, which may be of religious and cultural significance to them and may be eligible for the National Register, recognizing that an Indian tribe or Native Hawaiian organization may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites. The agency official should address concerns raised about confidentiality pursuant to Sec. 800.11(c).

We appreciate any assistance you can provide us in our efforts to comply with Section 106 of the National Historic Preservation Act. Please be assured that the Corps will treat any information you decide to share with us with the degree of confidentiality that is required in Section 800.11(c) of the Act, or with any other special restrictions you may require. If you have any questions or information concerning the proposed Skagit County levee rehabilitation APEs, please contact me at (206) 764-6454, or e-mail me (david.m.grant@usace.army.mil).

Sincerely,

David M. Grant, Staff Archaeologist
Environmental Resources Section

Enclosures
cc:
PM-PL-ERS – Lucas, Grant
OD-EM – Spicer

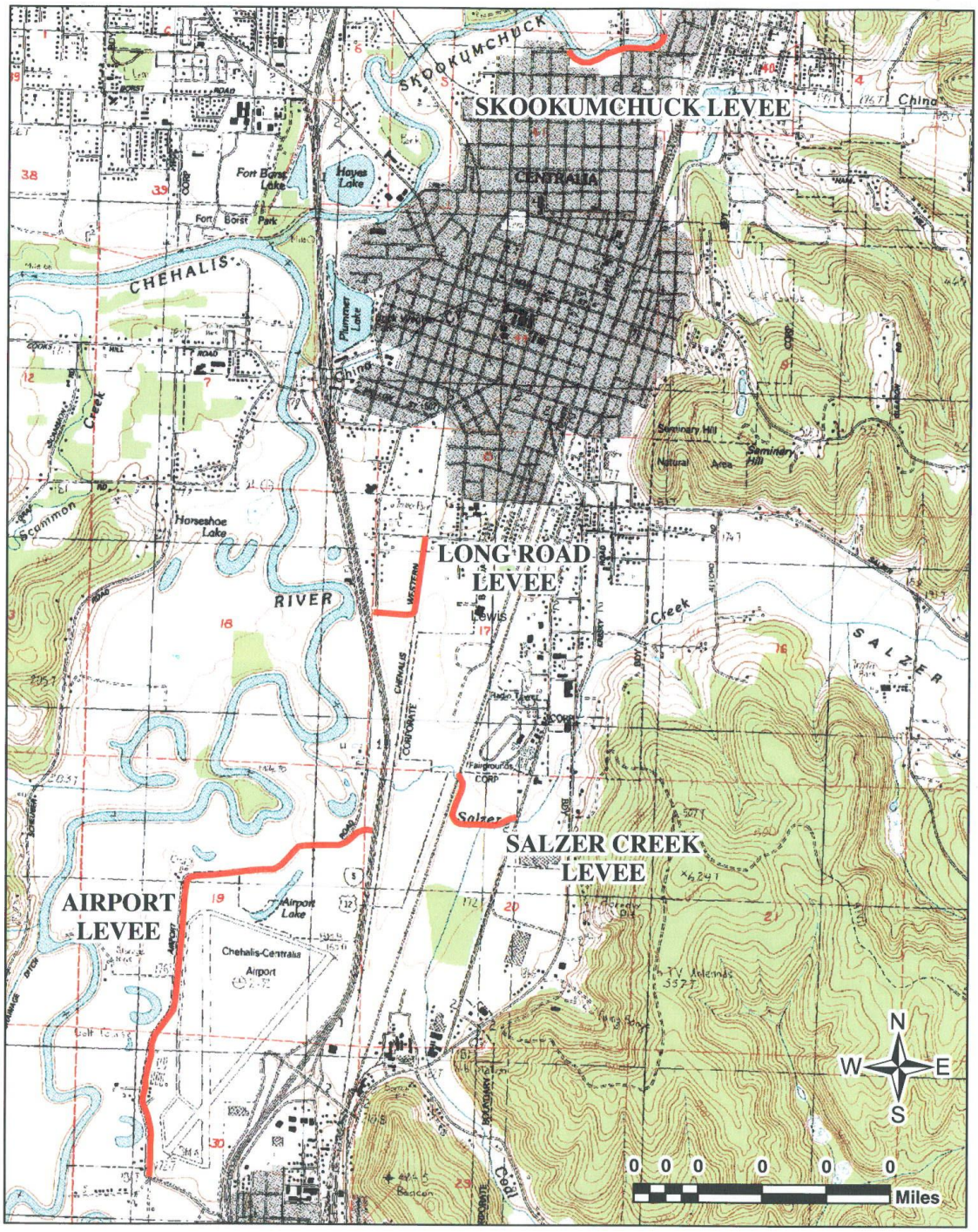


Figure 1. Topographic map showing the Chehalis and Centralia area levee rehabilitation projects.

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Environmental Resources Section

MAR 04 2008

David Burlingame, Cultural Resources
Cowlitz Indian Tribe
PO Box 2547
Longview, WA 98632-8594

SUBJECT: Request for knowledge of, or concerns with, Historic Properties for proposed levee rehabilitation at four locations in and near Centralia and Chehalis, Lewis County, Washington.

Dear Mr. Burlingame:

In December 2007 rainfall and snowmelt resulted in a 150-200 year peak flooding event on the Chehalis River in Lewis County, Washington. During this event, four federal and non-federal levees in and around Centralia and Chehalis sustained damage in the form of breaches, backslope erosion, and sloughing. These damaged levees include sections of the Skookumchuck River levee in Centralia, the federal Long Road Levee, the Salzar Creek Levee, and the Chehalis-Centralia Airport Levee.

In cooperation with their local sponsors, the U.S. Army Corps of Engineers, Seattle District (Corps) is currently considering a range of restorative actions including, but not limited to, minor repair of damaged levee surfaces to restore levees to pre-flood conditions, widening the levee bases on the riverward and/or landward sides to decrease the width to height ratio, and complete removal and repair of breached or damaged sections. Repairs limited to the existing levee prisms are unlikely to encounter intact archaeological deposits but the Corps has determined that some of the proposed levee repair work, such as that associated with levee expansion or complete removal of a levee prism to the prior grade prior to replacement, do have the potential to affect historic properties eligible for listing in the National Register of Historic Places (NHPA) if they exist within the project's area of potential effects or APE. This is especially true for proposed repairs to levees on or near documented archaeological sites as those located near the Chehalis Airport levee (45LE116, 179, 185, 187, 190, and 511) and the Skookumchuck levee (45LE193). The Long Road Levee APE was subjected to a professional archaeological survey with subsurface testing prior to construction of this federal project in 1995. The Salzer Creek Levee APE was subjected to a professional archaeological surface survey in 1977 that did not include subsurface testing.

Prior to levee rehabilitation construction a Corps, or contracted archaeologist, will survey the damaged areas to determine if there is a potential for the proposed repairs to cause effects to historic properties. If the archaeologist determines that the proposed work has a potential to cause effects then archaeological testing if possible, or monitoring during certain phases of construction may be necessary. National Historic Preservation Act (NHPA) Section 106 compliance reports will be prepared. The reports will include the findings of the investigations for each repair site, recommendations for archaeological monitoring during construction (if any),

and a recommended determination of effects to historic properties. If archaeological monitoring is recommended at some repair locations, the report will include a monitoring plan and protocols to be followed. The protocols will include an inadvertent discovery clause that will apply when an archaeological monitor is not present. The Corps' determinations of effects to historic properties, a report on the result of the investigations, and monitoring plan (if necessary) will be concurred with by the DAHP and reviewed by the Cowlitz Indian Tribe prior to the start of construction.

To further identify historic properties, Section 106 of the National Historic Preservation Act (NHPA or the Act) of 1966, as amended (36 CFR 800.4[a][3]), requires Federal agencies to seek information from tribes likely to have knowledge of, or concerns with, historic properties within the project's APEs. We are specifically seeking assistance in identifying properties that may be of religious or cultural significance and may be eligible for the National Register of Historic Places (NRHP), including Traditional Cultural Properties (TCP). Specific guidance concerning the Corps' obligation to contact your tribe regarding this issue is found at 36 CFR 800.4(a)(4), which states that the agency official shall:

> (4) Gather information from any Indian tribe or Native Hawaiian organization identified pursuant to Sec. 800.3(f) to assist in identifying properties, including those located off tribal lands, which may be of religious and cultural significance to them and may be eligible for the National Register, recognizing that an Indian tribe or Native Hawaiian organization may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites. The agency official should address concerns raised about confidentiality pursuant to Sec. 800.11(c).

We appreciate any assistance you can provide us in our efforts to comply with Section 106 of the National Historic Preservation Act. Please be assured that the Corps will treat any information you decide to share with us with the degree of confidentiality that is required in Section 800.11(c) of the Act, or with any other special restrictions you may require. If you have any questions or information concerning the proposed Lewis County levee rehabilitation APEs, please contact me at (206) 764-6454, or e-mail me (david.m.grant@usace.army.mil).

Copy furnished to Mr. Ed Arthur, Cultural Resources, The Cowlitz Indian Tribe, PO Box 2547, Longview, WA 98632-8594

Sincerely,

David M. Grant, Staff Archaeologist
Environmental Resources Section

Enclosure
cc:
PM-PL-ERS – Lucas
OD-EM – Spicer
PM-PL - Lake

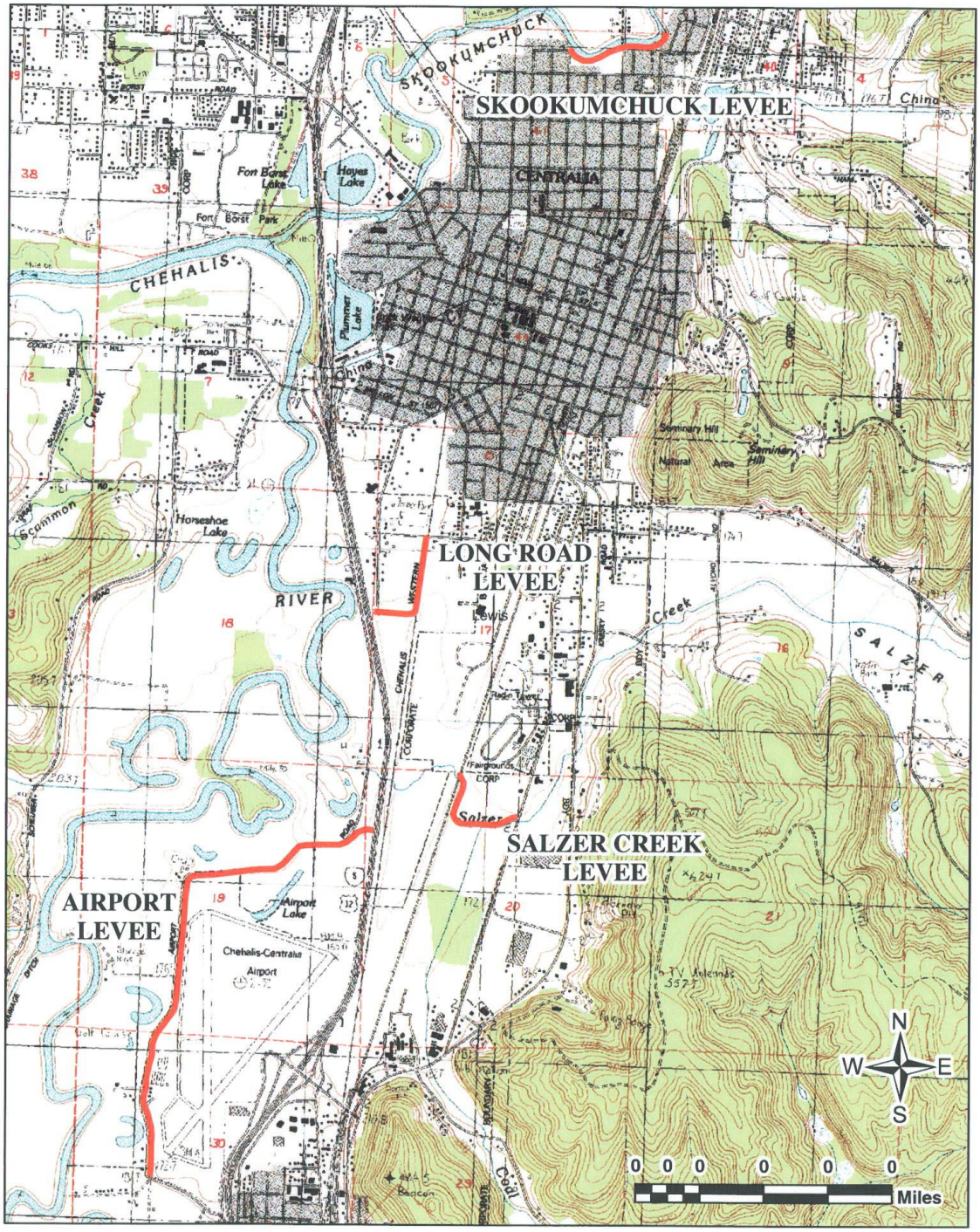


Figure 1. Topographic map showing the Chehalis and Centralia area levee rehabilitation projects.

USACE letters to SHPO

dated 18 May 2009

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Environmental Resources Section

MAY 18 2009

Allyson Brooks, PhD
State Historic Preservation Officer
Department of Archaeology and Historic Preservation
Post Office Box 48343
Olympia, Washington 98504-8343

SUBJECT: Section 106 Compliance Regarding Potential Effects to Historic Properties Related to Two PL 84-99 Levee Rehabilitation Projects in Lewis County, Washington.

Dear Dr. Brooks:

In December 2007, rainfall and snowmelt resulted in a 150-200 year peak flooding event on the Chehalis River in Lewis County, Washington. During this event, four federal and non-federal levees in and around Centralia and Chehalis sustained damage in the form of breaches, backslope erosion, and sloughing. These damaged levees include sections of the Skookumchuck River levee in Centralia, the federal Long Road Levee, the Salzer Creek Levee, and the Chehalis-Centralia Airport Levee (Kelly and Grant 2008:3).

In 2008, all four levees APEs were surveyed by Corps archaeologists David Grant and Katherine Kelly, with negative results for the Skookumchuck and Salzer Creek Levees. Grant inspected the proposed APEs with Richard Bellon, Dave Burlingame, and Ed Arthur. At that time, Grant described the monitoring plan (Kelly and Grant 2008: 38). The pedestrian archaeological surveys and inspection visits encountered limited ground surface visibility at most of the repair areas due primarily to heavy vegetation cover. The Corps' findings of the investigation, recommendations for archaeological monitoring during construction, a monitoring plan and inadvertent discovery protocols were included in a cultural resources report titled Historic Properties Survey and Archaeological Monitoring Plan for Four 2008 Levee Rehabilitation Projects (Lewis County, Washington). Of the four proposed projects, only Airport and Long Road Levee went to construction in 2008.

This year, the Corps and its local sponsor are considering restorative actions on the Skookumchuck and Salzer Creek Levees. The proposed APEs and project plans are identical to those proposed in 2008 (Kelly and Grant 2008:4, 5, 8, and 9).

Due to the limited exposure of original pre-levee ground surfaces at the proposed Skookumchuck Levee rehabilitation (especially near the west end near 45LE193), and the heavy vegetation at Salzer Levee, the Corps recommends that qualified archaeologist monitor construction activities which occur outside the existing levee prisms (Kelly and Grant 2008: 39 – 41). For rehabilitation work at the Skookumchuck and Salzer Levees, the Corps recommends a determination of No Historic Properties Affected, conditioned on the implementation of the monitoring plan. At the completion of

the project, a letter report will then be submitted to the Washington SHPO outlining the results of the monitoring, to complete the Section 106 process.

Copies of Project Information Reports for both levees and the Kelly and Grant 2008 survey report are included for your consideration, review and comment, and records (enclosure). We would appreciate your comments on the report and/or concurrence with our determination at your earliest convenience.

If you have any questions or information concerning the proposed Chehalis-Centralis levee Rehabilitation projects, please contact Ms Katherine M. Kelly of my staff at (206) 764-6857, or by e-mail at (katherine.m.kelly@usace.army.mil).

Sincerely,

Michael R Scuderi

Michael Scuderi, Acting Chief
Environmental Resources Section

Enclosures

Cc (with enclosures):
Mr. Ed Arthur
Cultural Resources
The Cowlitz Indian Tribe
PO Box 2547
Longview, WA 98632-8594

Richard Bellon
Cultural Resources
Confederated Tribes of the Chehalis Reservation
PO Box 536
Oakville, WA 98568.

Cc (without enclosures):
PM-PL-ERS – Hadley
PM-PL-ERS – Lucas
OD-EM – Spicer
PM-PL – Lake

SHPO concurrence letter

dated 20 May 2009

STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

May 20, 2009

Mr. Michael Scuderi
Environmental Resources Section
Seattle District, Corps of Engineers
PO Box 3755
Seattle, Washington 98124-3755

Re: Long Road, Salzer Creek and Chehalis-Centralia
Airport Levee Repair Project
Log No.: 052009-12-COE-S

Dear Ms. Scuderi:

Thank you for contacting our department. We have reviewed the professional archaeological survey report by COE staff archaeologists you provided for the proposed Long Road, Salzer Creek and Chehalis-Centralia Airport Levee Repair Project in Lewis County, Washington.

We concur with your determination of No Historic Properties Affected. We concur with your proposed stipulations for professional archaeological monitoring. Please provide the monitoring report when available that demonstrates your stipulations were followed.

We also would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on the behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act, as amended, and it's implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment on this undertaking and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 586-3080
email: rob.whitlam@dahp.wa.gov

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION
Protect the Past, Shape the Future

Appendix C: Public Comment

This page was intentionally left blank to facilitate double-sided copying.

Comment received from Dave Burlingame, Director, Cowlitz Indian Tribe; July 23, 2009:

The Cowlitz Indian Tribe recommends an Inadvertent Discovery Plan be added to the permit and they included language for our consideration.

USACE Response: An Inadvertent Discovery Plan will be incorporated into the construction management plan for the project. In addition, an USACE archaeologist will be onsite to monitor during construction.

Appendix D: Coordination with Washington Department of Ecology

This page was intentionally left blank to facilitate double-sided copying.

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Environmental and Cultural Resources Branch

Ms. Loree' Randall
Washington Department of Ecology
PO Box 47600
Olympia, Washington 98504

Dear Ms. Randall:

The U.S. Army Corps of Engineers, Seattle District (Corps) in partnership with City of Centralia are proposing levee rehabilitation activities along the Skookumchuck River in Lewis County, Washington.

On 3 and 4 December 2007, rainfall and snowmelt resulted in a 150 year peak flooding event on the Chehalis River. Flood flows in the Skookumchuck River were less severe, however flows were unable to exit into the Chehalis River. This backup and continued incoming flows caused flooding and erosion along the Skookumchuck River. During this event, the Skookumchuck Levee sustained damage in three places.

The project includes work below ordinary high water that substantively conforms to the provisions of the Corps' Nationwide Permit (NWP) 3. Attached is a functional analogy evaluation for the project in regards to NWP 3. The State has established parameters and conditions of general certification under Section 401 of the Clean Water Act (CWA). Per the attached memo, the Corps has concluded that the project meets the conditions for general certification under Section 401 of the CWA and is submitting this evaluation for your review.

In order to ensure that scheduled milestones are met, the NEPA process must be completed by 6 May 2011. Your assistance to meet this deadline is requested. If you have any questions or need additional information, please contact Ms. Hannah Hadley at telephone (206) 764-6950.

Sincerely,

Evan Lewis
Chief, Environmental and Cultural
Resources Branch

Memo

To: Loree' Randall, Department of Ecology

From: Hannah Hadley, U.S. Army Corps of Engineers

CC: Lorie Ochoa, Department of Ecology

Date: 4/28/2011

Re: Notice of Preparation/Public Notice PL-09-12 for the Skookumchuck River Levee Rehabilitation project, functional analogy to Nationwide Permit 3.

Introduction

The purpose of this document is to record the U.S. Army Corps of Engineers' (USACE) functional analogy evaluation for the repair of the Skookumchuck River Levee, Lewis County, Washington with respect to Nationwide Permit (NWP) 3. The Corps concludes that the proposed repair work on the Skookumchuck River Levee is functionally analogous to activities subject to authorization under NWP 3. The Corps also concludes that the project satisfies the conditions associated with application of Section 401 certification under NWP 3, and that extension of the State's general certification under Section 401 of the Clean Water Act to the project is therefore justified. Details of the proposed work are also found in the Notice of Preparation PL-09-12 previously provided to Ecology, which can also be found online at: http://www.nws.usace.army.mil/ers/reposit/finalNotice%20Of%20Preparation404_%20Skookumchuck.cmj2.pdf.

Background

On 3 and 4 December 2007, rainfall and snowmelt resulted in a 150 year peak flooding event on the Chehalis River. Flood flows in the Skookumchuck River were less severe, however flows were unable to exit into the Chehalis River. This backup and continued incoming flows caused flooding and erosion along the Skookumchuck River. During this event, the Skookumchuck Levee sustained damage in three places. Damages occurred along a total of 865 linear feet of the levee: 140 feet of toe scour from station 20+20 to 21+60, 325 feet of toe scour, riverward slope erosion and some seepage damage on the landward side from station 23+20 to 26+45, 400 feet of toe scour and riverward slope erosion from station 34+60 to 38+60.

The full repair alternative re-establishes the levee toe and prism with 2H:1V riverward slope at the two upstream locations, and a 1.5H:1V riverward slope at the downstream location. The levee toe would be re-established at all three locations using Class III riprap. The recommended repair would restore the levee back to the pre-flood 25-year level of protection. At the repair location between stations 23+20 and 26+45, the crown would be extended landward and the landward slope would be modified to 2H:1V, while remaining within the pre-existing levee footprint. At the repair location between stations 20+20 and 21+60 the project would create a 2' by 6' seepage berm on the landward side, thus encompassing a larger landward footprint than that pre-existing the flood event. Prior to construction, the levee repair locations would be cleared and grubbed. The scour and erosion damage would be repaired by excavating the existing levee prism and replacing the material using proper construction methods. The levee would be cut down where necessary and reconstructed per EM 1110-2-1913 chapter 7, refer to table 7-1, Category II – semi-compacted construction method. The imported levee material shall be of similar gradation to the existing levee material.

After construction the repaired slopes would be hydroseeded with native grass seed mix to prevent erosion after construction. The repair includes construction of a willow lift to be placed just above ordinary high water at each of the two upstream repair locations. All necessary measures, including irrigation and monitoring, would be taken to maximize the potential for planting success.

The Corps' Analysis of NWP 3 State Certification Conditions

The Corps does not issue permits for its own civil works activities. Nevertheless, the Corps has accepted responsibility for the compliance of its civil works projects with Section 404, as well as the obligation to seek water quality certification under Section 401. NWP 3 applies to the repair, rehabilitation, or replacement of a previously authorized structure; thus, NWP 3 does not directly apply to Corps activities under Public Law 84-99. However, the effects of the Corps' Skookumchuck River Levee repair project on water quality would be essentially identical to the water quality effects of repairs to Corps-authorized structures. Therefore, the Corps has concluded that this Skookumchuck River Levee repair would generate effects that are functionally analogous to the effects of a repair to an authorized structure conducted in accordance with NWP 3, and that extension of the water quality certification established under NWP 3 to this project is fully justified.

Nationwide Permit 3 authorizes the repair, rehabilitation, or replacement of any currently serviceable structure, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized.

General State Section 401 certification under NWP 3 has been established, subject to conditions. Individual review is required if:

1. The project or activities are below the OHWM with new work being proposed outside the original footprint.
2. The proposed project or activity increases the original footprint of the structure by more than 10 percent in wetlands.

The purpose of the project is to repair the damaged levee. The project is to repair an existing serviceable structure and to maintain the use (i.e. flood control) of the structure. The project qualifies for general State 401 certification because the project remains within the original footprint of the levee and does not involve any wetland impacts. The project would replace soil with riprap within the original footprint. The environmental coordinator consulted a project manager in Regulatory and they concurred that the change in material would constitute a minor deviation.

The Corps' Analysis of State 401 Certification General Conditions

In order for any NWP authorization involving Section 404 activities to be valid in Washington State, permittees must comply with all applicable State 401 Certification general conditions. The following are the eight general conditions and how the Skookumchuck River Levee Rehabilitation project meets the condition.

1. For in-water construction activities. *Individual 401 review is required under this condition for projects or activities authorized under NWPs that will cause, or be likely to cause or contribute to an exceedence of a State water quality standard (WAC 173-201A) or sediment management standard (WAC 173-204).*

There may be water quality impacts such as a slight increase in turbidity during construction. However, equipment would not enter the water and would remain on dry ground at all times. In addition, best

management practices for construction activities would be employed. As a result the short term effects to water quality would be minimal. No long term effect to water quality would occur.

2. Projects or Activities Discharging to Impaired Waters. *Individual 401 review is required by this condition for projects or activities authorized under NWPs if the project or activity may result in further exceedences of a specific parameter the waterbody is listed for on the state's list of impaired waterbodies (the 303(d) list).*

Water quality problems are well documented in the mainstem Chehalis River upstream of Porter Creek, particularly for warm water temperatures and low dissolved oxygen levels. The temperature problems are likely related to riparian loss, increased sedimentation resulting in channel changes (width–to-depth ratios), and decreased water flows, not only in the mainstem Chehalis, but also in tributaries (Smith and Wenger 2001). Warm water temperatures and low dissolved oxygen levels are also documented in tributaries including the Humptulips, Wynoochee, Satsop, Wildcat, Independence, Lincoln, Black, Scatter, Skookumchuck, Salzer, Dillenbaugh, Newaukum, Stearns, Bunker, South Fork Chehalis, and upper Chehalis sub-basins. The known causes of the poor water quality problems in these sub-basins are riparian loss or conversion, livestock waste, sedimentation, decreased flows, industrial inputs, and urban stormwater.

The Chehalis and Skookumchuck rivers is listed on the Washington State Department of Ecology's (WDOE) impaired water quality list, category 5 of the 303(d) list for PCB, turbidity, dioxin and category 4A of the 303(d) list, for exceeding temperature. None of these listings apply to the river within the project area; however downstream of the project site is listed as category 5 for PCB and dioxin and category 4A for temperature.

The Skookumchuck River Levee repair will not result in the further exceedances of any of these parameters. The use of clean rock from an established quarry would not result in the release of PCBs.

3. Notification. *Projects requiring individual 401 review must provide Ecology with written documentation from the Corps including a description of the project, delineation of special aquatic sites, and Coastal Zone Management Program "Consistency Determination."*

The Skookumchuck River Levee repairs are functionally analogous to NWP 3 and qualify for State's general certification for Section 401 of the Clean Water Act; therefore, the repair projects do not require individual 401 review. Project description details are discussion above in the third paragraph of this memo, and the project drawings are included as an attachment to this memo. No special aquatic sites occur in the project footprints.

4. Aquatic resources requiring special protection. *Certain aquatic resources are unique, difficult-to replace components of the aquatic environment in Washington State. Activities that would affect these resources must be avoided to the greatest extent possible. Compensating for adverse impacts to high value aquatic resources is typically difficult, prohibitively expensive, and may not be possible in some landscape settings. Individual 401 review is required for activities in specified wetland types.*

The Skookumchuck River Levee repairs do not impact wetlands and thereby do not affect any unique aquatic resources as defined in the general conditions.

5. Mitigation. *401 Certification is based on adequate compensatory mitigation being provided for wetland and other water quality-related impacts of projects or activities authorized under the NWP Program*

No mitigation is necessary to offset any potential impacts. The project has minimal impacts to water quality. No wetlands would be impacted by the project.

6. Temporary Fills. *Individual 401 review is required for any project or activity with temporary fill in wetlands or other waters of the State for more than 90 days, unless the applicant has received written approval from Ecology.*

The repair project does not involve temporary fills.

7. Mill Creek Special Area Management Plan. *This condition applies to all NWPs within the boundaries described in the Mill Creek Special Area Management Plan (SAMP), King County, Washington*

The project is not within the Mill Creek SAMP.

8. State Certification for PCNs not receiving 45-day response. *In the event the U.S. Army Corps of Engineers does not respond to a complete pre-construction notification within 45 days, the applicant must contact Ecology for Individual 401 review.*

Pre-construction notifications (PCNs) are not required for NWP 3(a), repair, rehabilitation, or replacement of previously authorized, currently serviceable structures or fills. This project is functionally analogous to NWP 3(a) pursuant to Section 404 of the Clean Water Act.

The Corps' Conclusion

The Corps concludes that the project is functionally analogous to Nationwide Permit (NWP) 3 pursuant to Section 404 of the Clean Water Act. Furthermore, the Corps has analyzed the project pursuant to the general conditions established by the State associated with authorization under NWP 3, and concluded that the proposed repair project satisfies those conditions; thus, extension of the State's general water quality certification under Section 401 of the Clean Water Act is fully justified.

LEGEND

TEMPORARY CONSTRUCTION EASEMENT FROM ACCESS RAMP ON TOWER STREET. PERMANENT CONSTRUCTION EASEMENT FROM EXISTING LANDWARD TOE TO RIVERWARD PRE-FLOOD TOE OF EXISTING LEVEE FOOTPRINT BETWEEN STATIONS 30+30 AND 21+00.

REPAIR LEVEE SLOPES RIVERWARD AND LANDWARD BETWEEN STATIONS 31+80 AND 37+86. TEMPORARY ACCESS FROM TOWER STREET. PERMANENT EASEMENT FROM EXISTING LANDWARD TOE TO EXISTING PRE-FLOOD RIVERWARD TOE.

REPAIR LEVEE RIVERWARD SLOPE AND TOE FROM STATION 34+40 TO 38+40. TEMPORARY ACCESS AND CONSTRUCTION EASEMENT FROM PEARL STREET. PERMANENT EASEMENT FROM EXISTING LANDWARD TOE TO PRE-FLOOD EXISTING RIVERWARD TOE.

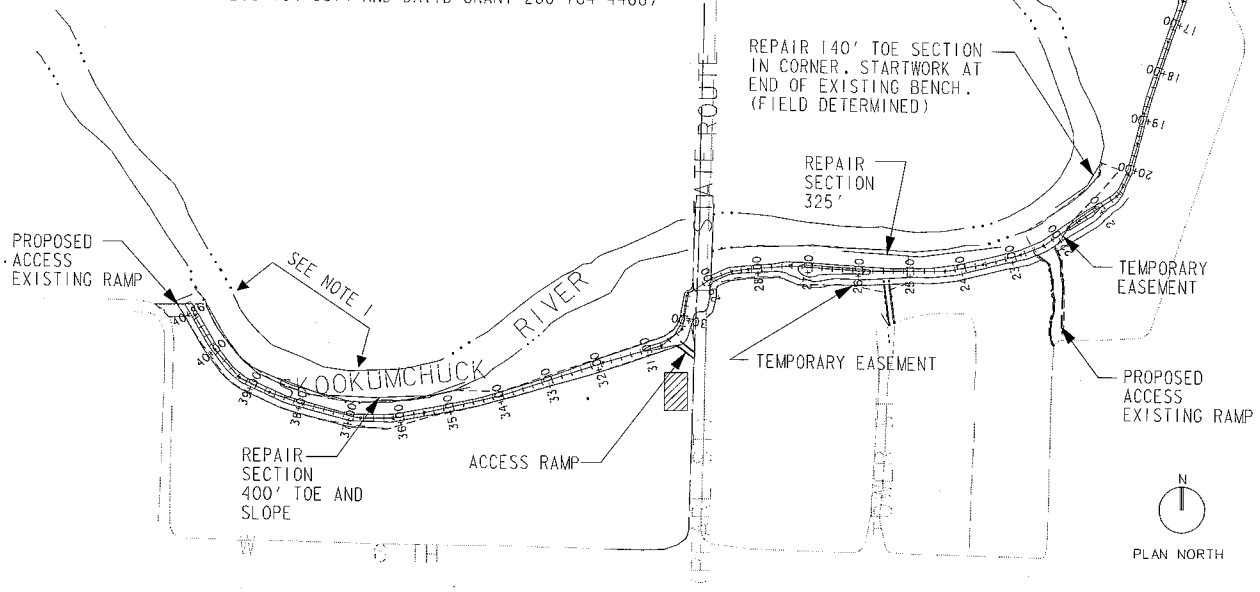
PERMANENT CONSTRUCTION LIMITS BETWEEN TOE ON LANDWARD SIDE AND TOE ON CREEKWARD SIDE

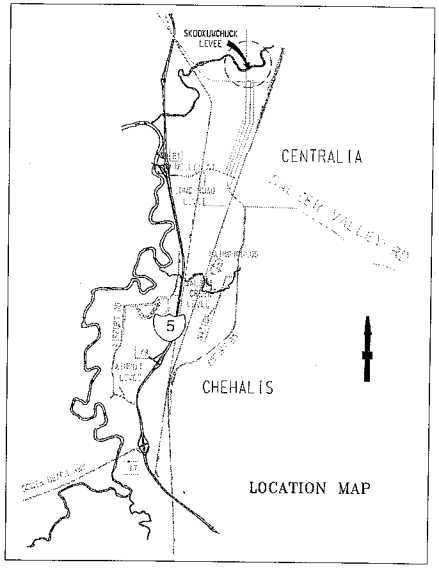
ACCESS RAMPS

PROPOSED STAGING AREA

NOTE:

1. EMBANKMENT EXCAVATION BETWEEN STATIONS 37+00 AND 40+86 TO BE MONITORED BY CORPS ENVIRONMENTAL SPECIALIST. (POC'S: KAT KELLY 206-764-6674 AND DAVID GRANT 206-764-4466)





SKOOKUMCHUCK LEVEE SITE PLAN

US Army Corps of Engineers
Seattle District

Symbol	Description	Date	Appr.	Symbol	Description

Designed by: DESJARDIN
Drawn by: DESJARDIN
Checked by:
Date: 9 DEC 08
File #: EC-08-CS
Rev.

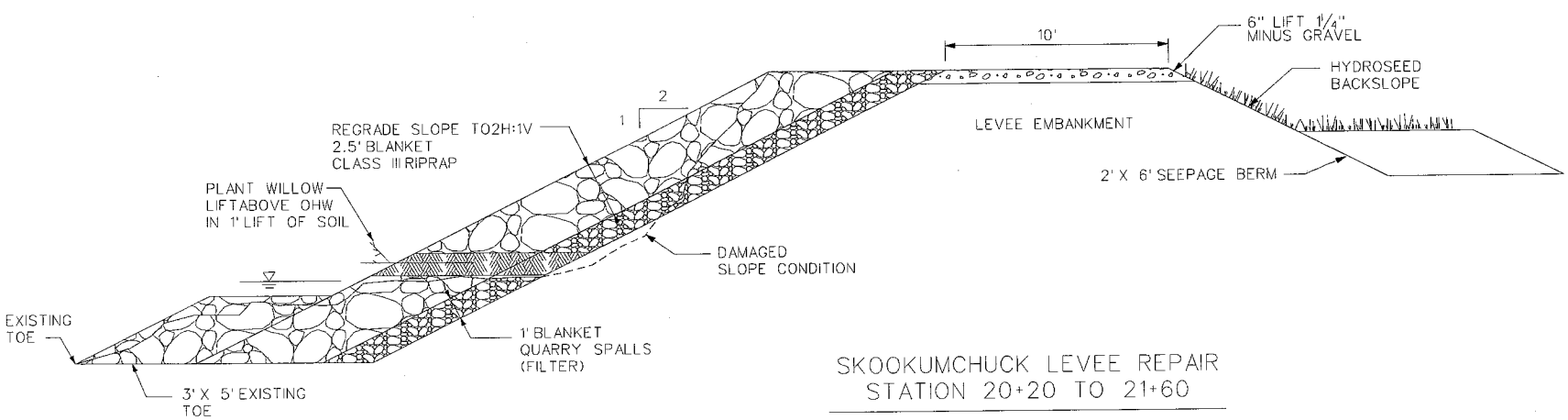
U.S. ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON
Prepared by:

PL84-99 REHABILITATION & INSPECTION PROGRAM
2008 LEVEE REPAIRS
SKOOKUMCHUCK LEVEE
SITE PLAN - LOCAITON
& VICINITY MAPS
LEWIS COUNTY WA

Plate number:
C-101
Sheet 1 of 4

DATE AND TIME PLOTTED: 12/8/2008 3:08:19 PM DESIGN FILE: f:\MISC\CIV\CHEHALIS\2008 LEVEE REPAIRS\SKOOKUMCHUCK C-101.DGN

XXXX



SKOOKUMCHUCK LEVEE REPAIR
STATION 20+20 TO 21+60

NOTES:

1. EXCAVATE LEVEE AND REWORK EXISTING BANK TO RE-ESTABLISH 3' X 5' TOE. PLACE FILTER BLANKET ON SLOPE, COVER WITH 2.5' BLANKET OF CLASS III RIPRAP. CREATE 2' X 6' SEEPAGE BERM ON BACKSLOPE. PLACE ENOUGH FILL IN LEVEE TO REPLACE LOST EMBANKMENT MATERIAL AS LEVEE TENDS TO SEEP. WHEN CONSTRUCTION IS COMPLETE, PLACE 6" LIFT OF 1¼" MINUS CRUSHED GRAVEL ON LEVEE CROWN AND ACCESS ROAD. HYDROSEED BACKSLOPE AND DISTURBED AREAS.

2. PLANT WILLOWS ON 6" CENTERS IN 1' LIFT OF SOIL ABOVE OHW AS SHOWN.

3. EXCAVATION INTO EMBANKMENT, CLEARING AND GRUBBING FOR SEEPAGE BERM TO BE OBSERVED BY A CORPS ENVIRONMENTAL SPECIALIST. (POC'S: KAT KELLY 206-764-6674 AND DAVID GRANT 206-764-4466).

US Army Corps of Engineers
Seattle District

Symbol	Description	Date	Appr.	Symbol	Description
		/ /			

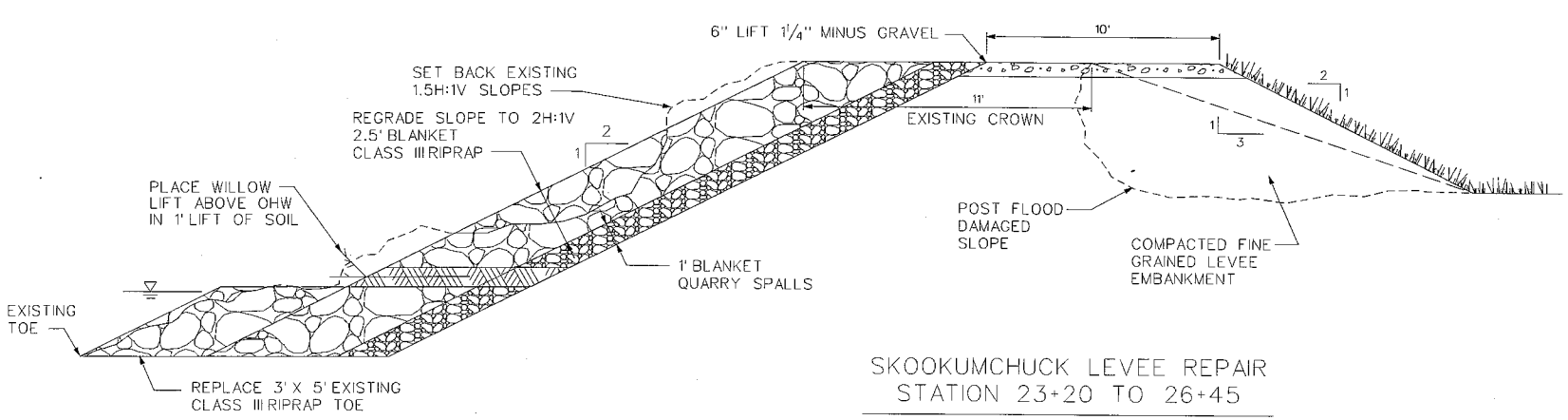
Designed by: DES JARDIN
Drawn by: L. EJON
Checked by:
Date: 9 DEC 08
File: EC-DB-CS
Rev.:

U.S. ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON
Prepared by: EC-DB-CS

PL84-99 REHABILITATION & INSPECTION PROGRAM
2008 LEVEE REPAIRS
SKOOKUMCHUCK
CROSS SECTIONS
STATION 20+20 TO 21+60
LEWIS COUNTY WA

Plate number:
C-102
Sheet 2 of 4

DATE AND TIME PLOTTED: 12/8/2008 3:29:38 PM DESIGN FILE: I:\MISC\CIVIL\CHEHALIS\2008 LEVEE REPAIRS\SKOOKUMCHUCK C-102.DGN



SKOOKUMCHUCK LEVEE REPAIR
STATION 23+20 TO 26+45

NOTES:

1. CLEAR AND GRUB LEVEE. CITY IS RESPONSIBLE FOR DISPOSING OF DEBRIS. REPLACE DAMAGED TOE AS NECESSSARY. EXCAVATE LEVEE EMBANKMENT ON LANDWARD SIDE TO SOLID FOUNDATION. REPLACE MATERIALPER EM 1110-2-1913, CH. 7, TABLE 7.2, CATEGORY II. PLACE 6" LIFT GRAVEL ON LEVEE CROWN AND RAMP. HYDROSEED DISTURBED AREAS

2. PLANT WILLOWS ON 6" CENTERS IN 1' LIFT OF SOIL AS SHOWN.

3. EXCAVATION INTO EMBANKEMNENT, CLEARING AND GRUBBING TO BE MONITORED BY A CORPS ENVIRONMENTAL SPEICIALIST. (POC'S: KAT KELLY 206-764-6674, DAVID GRANT 206-764-4466).

IF SHEET MEASURES LESS THAN 22" X 34" IT IS A REDUCED PRINT. REDUCE SCALE ACCORDINGLY.

US Army Corps of Engineers
Seattle District

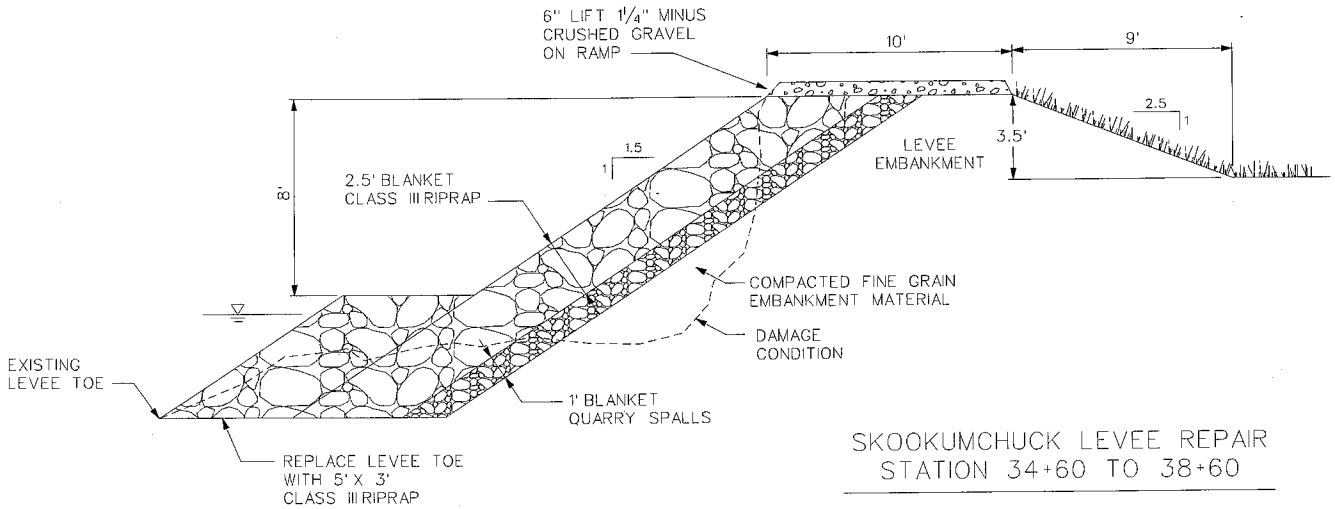
Symbol	Description	Date	Appr.	Symbol	Description
		/ /			

U.S.ARMY ENGINEER DISTRICT,SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON
Prepared by: EC-DB-CS
Designed by: LES JARDIN
Drawn by: LEJON
Checked by:
Date: 9 DEC 08
File: EC-DB-CS
Rev.

PL84-99 REHABILITATION & INSPECTION PROGRAM
2008 LEVEE REPAIRS
SKOOKUMCHUCK
CROSS SECTIONS
STA 23+20 TO 26+45
LEWIS COUNTY WA

Plate number:
C-103
Sheet 3 of 4

DATE AND TIME PLOTTED: 12/8/2008 3:14:55 PM DESIGN FILE: I:\WISCIV\CHEHALIS\2008 LEVEE REPAIRS\SKOOKUMCHUCK C-103.DGN



SKOOKUMCHUCK LEVEE REPAIR
STATION 34+60 TO 38+60

NOTES:

1. CLEAR AND GRUB SITE PRIOR TO CONSTRUCTION. EXCAVATE AND REWORK AS NECESSARY TO RE-ESTABLISH LEVEE TO RIVERWARD SLOPE. PLACE FINE GRAINED FILL AND COMPACT; COVER WITH 1' BLANKET QUARRY SPALLS AND THEN COVER WITH ARMOR PROTECTION ON RIVERWARD SLOPE.

2. CLEARING, GRUBBING, AND EXCAVATION INTO EMBANKMENT MUST BE OBSERVED BY A CORPS ENVIRONMENTAL SPECIALIST. (POC'S: KAT KELLY 206-764-6674 AND DAVID GRANT 206-764-4466).

IF SHEET MEASURES LESS THAN 22" X 34" IT IS A REDUCED PRINT. REDUCE SCALE ACCORDINGLY.

US Army Corps of Engineers
Seattle District

Symbol	Description	Date	Appr.	Symbol	Description
		/ /			

U.S. ARMY ENGINEER DISTRICT, SEATTLE
CORPS OF ENGINEERS
SEATTLE, WASHINGTON

Designed by: DESJARDIN
Drawn by: LEJON
Checked by:
Prepared by: EC-DB-CS
Date: 9 DEC 08
File: EC-DB-CS
Rev.

PL84-99 REHABILITATION & INSPECTION PROGRAM
ZOBA LEVEE REPAIRS
SKOOKUMCHUCK
CROSS SECTIONS
STATION 34+60 TO 38+60
LEWIS COUNTY WA

Plate number:
C-104
Sheet 4 of 4

DATE AND TIME PLOTTED: 12/8/2008 3:16:16 PM DESIGN FILE: I:\MISC\CIV\CHEHALIS\2008 LEVEE REPAIRS\SKOOKUMCHUCK C-104.DGN

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

May 5, 2011

U.S. Army Corps of Engineers, Seattle District
Environmental and Cultural Resources Branch
ATTN: Mr. Evan Lewis
P.O. Box 3755
Seattle, WA 98123-3755

RE: U.S. Army Corps of Engineers (Corps) Reference No. PL-09-12
Skookumchuck River Levee Rehabilitation, Lewis County, Washington

Dear Mr. Lewis:

This letter is to confirm that the above-referenced project will not require an individual water quality certification from the Department of Ecology (Ecology). Upon review of the April 28, 2011 Memo that the Corps submitted, Ecology has determined that the project meets the requirements for Washington State 401 Water Quality Certification under Nationwide Permit (NWP) 3, Maintenance. Therefore, an Individual 401 certification will not be required for this project.

If at any time the project changes the Corps shall notify Ecology in writing before the new work begins. At that time Ecology will determine if any additional review is required.

Please contact me if you have any questions regarding this letter at (360) 407-6926 or e-mail loch461@ecy.wa.gov.

Sincerely,

Lori Ochoa
Federal Permit Coordinator
Shorelands and Environmental Assistance Program

cc: Scott Brummer, WDFW

e-cc: ECY RE FEDPERMITS
Loree' Randall, Ecology HQ
Jessica Moore, Ecology HQ
Alex Callender, Ecology, SWRO

Clean Water Act Section 404(b)(1) Evaluation

Skookumchuck River Levee Rehabilitation
Lewis County, Washington

Clean Water Act

Prepared by:

U.S. Army Corps of Engineers
Seattle District
Environmental Resources Section

May 2011

US Army Corps of Engineers ®
Seattle District

1.0 INTRODUCTION

The purpose of this document is to record the U.S. Army Corps of Engineers (USACE) compliance evaluation of the Skookumchuck River levee repair project pursuant to the Clean Water Act (CWA) and the General Regulatory Policies of USACE. Specifically, Section 404 of the CWA requires an evaluation of impacts for work involving discharge of fill material into the waters of the U.S., and evaluation guidance can be found in the CWA 404(b)(1) Guidelines [40 CFR §230.12(a)].

The main body of this document summarizes the information presented in Attachment A and includes relevant information from the Environmental Assessment for the project that was collected pursuant to the National Environmental Policy Act (NEPA) of 1969 [42 USC §4321 et seq.]. Attachment A provides the specific USACE analysis of compliance with the CWA 404(b)(1) and the General Regulatory Policy requirements.

2.0 PROJECT BACKGROUND

Skookumchuck River enters the Chehalis River at approximately river mile 67 in the upper Chehalis River basin. Skookumchuck Levee is located along the left bank of Skookumchuck River in the town of Centralia, in western Washington. The damage locations are located on the left bank of the Skookumchuck River between river miles 2.1 and 2.7. Skookumchuck Levee is approximately 4,100 feet in length. This levee is located in Sections 4 and 5, Township 14 North, Range 2 West. The levee is composed of earthen material with a gravel/sod driving surface and sod side slopes with some armor protection at the toe of the riverward slope. The project was originally constructed with typical riverward and landward slopes of 1.5H:1V (horizontal to vertical) to 2H:1V. In its pre-flood condition, the levee was designed to provide protection from the 4% (25-year) flood event.

3.0 PROJECT NEED AND PURPOSE

3.1 Need

On 3 and 4 December 2007, rainfall and snowmelt resulted in a 150 year peak flooding event on the Chehalis River. Flood flows in the Skookumchuck River were less severe, however flows were unable to exit into the Chehalis River. This backup and continued incoming flows caused flooding and erosion along the Skookumchuck River. During this event, the Skookumchuck Levee sustained damage in three places. Damages occurred along a total of 865 linear feet of the levee: 140 feet of toe scour from station 20+20 to 21+60; 325 feet of toe scour, riverward slope erosion and some seepage damage on the landward side from station 23+20 to 26+45; and 400 feet of toe scour and riverward slope erosion from station 34+60 to 38+60.

This levee is integral to protecting public safety and property. The levee protects much of the northern half of the City of Centralia (2008 estimated population 15,520). The 2000 census data indicate that the area protected from flooding by the levee includes over 1,200 housing units. The levee was designed to provide protection from the 25-year flood event; however in its current damaged condition the levee offers approximately 4-year level of protection.

3.2 Purpose

The purpose of the project is to restore the pre-existing level of flood protection to the Skookumchuck Levee which was damaged in the December 2007 flood event.

4.0 PROPOSED ACTION AND ALTERNATIVES

Multiple alternatives were considered including the No-Action Alternative, the Non-Structural Alternative, the I-Wall Alternative, the Set Back Alternative, and the Repair to Pre-flood Condition Alternative (the Preferred Alternative). In order for any alternative to be acceptable for consideration it must meet certain objectives. The alternative must provide for a level of flood protection equivalent to the level of protection that pre-existed the flood event. Also, pursuant to USACE policy, the selected alternative must be economically justified, it should be environmentally acceptable, and it should minimize costs for both the non-Federal Sponsor and the Federal government to the extent possible.

This alternative consists of leaving the levee in its current damaged condition and taking no action to address the damage incurred in the 2007 flood and the present four-year level of protection. This alternative has high potential for flood damage to the protected structures and lands behind the levee. The no-action alternative does not meet the project purpose and need, and is brought forward for comparative purposes.

4.1 Non-Structural Alternative

The Non-Structural Alternative would raise or relocate all existing public facilities and commercial structures. Because the costs associated with flood proofing or relocating the structures in the potential inundation area would significantly exceed the cost of repairing the levee, the non-structural alternative was eliminated from further consideration.

4.2 I-Wall Alternative

The I-Wall Levee alternative would allow the levee repair within the original levee footprint. This alternative was considered due to the highly developed nature of the area. Construction cost of an I-wall is approximately four times higher than the preferred alternative. Due to the high cost, this alternative was not pursued further.

4.3 Set Back Alternative

This Set Back Alternative would move the levee landward to allow the Skookumchuck River more conveyance though the project reach. This alternative was screened from further analysis as it would require the acquisition of land by the sponsor and would require hydraulic and geotechnical modeling studies to show the effects of the levee setback and eventual channel modification. The costs associated with this alternative far outweigh the costs of repairing the levee in place. This alternative was not selected for further analysis.

4.4 Repair to Pre-flood Condition (Preferred Alternative)

This alternative consists of restoring the levee to pre-flood conditions by re-establishing the levee prism, including the riverward and landward slopes and the levee crown. See Appendix A for project drawings.

The full repair alternative re-establishes the levee toe and prism with 2H:1V riverward slope at the two upstream locations, and a 1.5H:1V riverward slope at the downstream location. The levee toe would be re-established at all three locations, by excavating the riverward levee face and reworking the existing bank to re-establish a 3’ X 5’ toe at the two upstream locations and a 5’ X 3’ toe at the downstream location, using Class III riprap. The recommended repair would restore the levee back to the pre-flood 25-year level of protection. At the repair location between stations 23+20 and 26+45, the crown would be extended landward by approximately 6 feet, and the landward slope would be steepened to 2H:1V, while remaining within the pre-existing levee footprint. At the repair location between stations 20+20 and 21+60 the project would create a 2’ by 6’ seepage berm on the landward side, thus enlarging the landward footprint by 6 feet as compared with the footprint pre-existing the flood event. Prior to construction, the levee repair locations would be cleared and grubbed. The scour and erosion damage would be repaired by

excavating the existing levee prism and replacing the material using proper construction methods. The levee would be cut down where necessary and reconstructed per EM 1110-2-1913 chapter 7, table 7-1, Category II – semi-compacted construction method. The imported levee material shall be of similar gradation to the existing levee material.

After construction the repaired landward slopes would be hydroseeded with native grass seed mix to prevent erosion after construction. The repair includes construction of a willow lift to be placed just above ordinary high water at each of the two upstream repair locations. All necessary measures, including irrigation, would be taken to maximize the potential for planting success.

5.0 POTENTIALLY ADVERSE EFFECTS (INDIVIDUALLY OR CUMULATIVELY) ON THE AQUATIC ENVIRONMENT

a. Effects on Physical, Chemical, or Biological Characteristics of the Aquatic Ecosystem

There may be water quality impacts such as minor increase in turbidity during construction. Equipment would not enter the water and would remain on dry ground at all times. Best management practices for construction activities would be employed. There will be no impacts that further worsen the 303(d) listings for the river.

b. Effects on Recreational, Aesthetic, Historical, and Economic Values

There will be some loss of recreational, aesthetic, and economic value to the public during construction. There will be temporary construction-related aesthetic impacts as ground disturbance by heavy equipment occurs, generating noise and temporary minor air quality impacts.

Economic values will be preserved since the levee will protect road infrastructure from flooding. The project has a positive benefit:cost ratio. Construction will contribute to jobs in the local area.

In accordance with the National Historic Preservation Act (16 USC 470), historic properties have been investigated, and consultation has been completed in May 2009 with the Washington State Historic Preservation Officer (SHPO). USACE determined that the project would result in No Historic Properties Affected. USACE determined that construction efforts within the APE should be monitored by a professional archaeologist and that a monitoring report should be submitted to DAHP.

c. Findings

There will be no significant adverse impacts to aquatic ecosystem functions and values.

6.0 ALL APPROPRIATE AND PRACTICABLE MEASURES TO MINIMIZE POTENTIAL HARM TO THE AQUATIC ECOSYSTEM

a. Impact Avoidance Measures

The project has minimal impacts and no wetlands are in the project footprint. USACE archaeologist will be onsite to monitor and avoid any cultural resources, if discovered.

b. Impact Minimization Measures

USACE will take all practicable steps during construction of the project to minimize impacts to aquatic and terrestrial resources. Best management practices will be used. Contingencies will be in place if any of the water quality protection measures fail to achieve their intended function. The minimization measures will be as follows:

- Best management practices (BMPs), such as stormwater runoff prevention, will be used to ensure that no unnecessary damage to the environment occurs;

- USACE archaeologist will be onsite monitoring;
- USACE biologist will regularly check on construction progress to ensure BMPs are in place and environmental impacts are properly avoided and minimized.

c. Compensatory Mitigation Measures

No mitigation is necessary to offset any potential impacts. The project has minimal impacts. No wetlands would be impacted by the project

d. Findings

USACE has determined that all appropriate and practicable measures have been taken to minimize potential harm to the environment.

7.0 OTHER FACTORS IN THE PUBLIC INTEREST

a. Fish and Wildlife

The most immediate impact would be a temporary displacement of fish and wildlife due to construction activities. Excavation, transportation, and placement of embankment materials would require the use of heavy construction equipment whose presence and noise may temporarily displace some species at both the borrow pit and construction sites. Currently, construction is scheduled to take place during the appropriate fish window, July 1 to August 31.

Most birds, mammals and other wildlife would be disturbed by construction activities, but would be able to disperse to similar remaining habitat in the vicinity of the project area. Subterranean amphibians, reptiles and small mammals occupying burrows at the levee toes may be lost as a result of ground disturbance and the use of heavy earth-moving equipment. In the project site, which is largely already disturbed compared to undeveloped areas, many wildlife species are relatively tolerant of humans and their activities. Minimal disturbance of aquatic habitat would occur at the toe of the levee.

Vegetation removal would be minimal so impacts to fish and wildlife due to vegetation removal are expected to be minor. Vegetation removal by USACE would occur only to access the sites and as necessary to repair the damaged area, and post-construction hydroseeding would compensate for any loss of vegetation. Given the hydroseeding on the landward slope, the minimal amount of vegetation being removed, and in-water work being completed during the approved WDFW construction window, impacts to fish and wildlife by the federal action are expected to be insignificant.

b. Water Quality. USACE concludes that the project is functionally analogous to Nationwide Permit (NWP) 3 pursuant to Section 404 of the Clean Water Act. The project would replace soil with riprap within the original footprint. The environmental coordinator consulted a project manager in Regulatory and they concurred that the change in material would constitute a minor deviation. Furthermore, USACE has analyzed the project pursuant to the general conditions established by the State associated with authorization under NWP 3, and concluded that the proposed repair project satisfies those conditions; thus, extension of the State's general water quality certification under Section 401 of the Clean Water Act is fully justified. USACE has provided Ecology the opportunity to review the determination that the general certification applies by functional analogy. Ecology has determined that the general water quality certification associated with NWP 3 covers this project, and that individual water quality certification is thus not required.

c. Historical and Cultural Resources

See 5.b. above.

e. Environmental Benefits.
The project does not have any associated environmental benefits; however, the project provides flood protection to residents.

9. Conclusions. USACE finds that this project is within the public's interest and complies with the substantive elements of Section 404 of the Clean Water Act and the Rivers and Harbors Act.

Attachment A

Clean Water Act 404(b)(1) Evaluation [40 CFR §230]
Permit Application Evaluation [33 CFR §320.4]

404(b)(1) Evaluation [40 CFR §230]

Potential Impacts on Physical and Chemical Characteristics [Subpart C]:

1. **Substrate [230.20]**
   Rock (riprap, quarry spalls) would be placed below OHW at the toe of the levee.
2. **Suspended particulates/turbidity [230.21]**
   Best management practices (BMPs) will be in place during construction to minimize any potential turbidity issues. Equipment would not enter the water and would remain on dry ground at all times. No materials would be excavated below OHW.
3. **Water [230.22]**
   The project is not expected to add any contaminants to the water that could affect the clarity, color, odor, or aesthetic value of the adjacent Skookumchuck River, or that could reduce the suitability of the river for aquatic organisms or recreation.
4. **Current patterns and water circulation [230.23]**
   USACE expects no disruption of current patterns or water circulation at this site during or after construction.
5. **Normal water fluctuations [230.24].**
   The Skookumchuck River is subject to periodic high and low flows; those will not change as a result of this work.
6. **Salinity gradients [230.25]**
   Not applicable.

Potential Impacts on Biological Characteristics of the Aquatic Ecosystem [Subpart D]:

1. **Threatened and endangered species [230.30]**
   Only one species listed as threatened, coastal bull trout potentially occurs in the middle Chehalis River basin, although they are not documented to occur upstream of RM 45 in the mainstem or within the Skookumchuck River watershed. In all likelihood, the rare bull trout that could occur in the river basin would not be impacted because: (1) Skookumchuck River provides poor quality habitat for bull trout, (2) in-water work would occur during periods when the river is typically dry or at extremely low levels, (3) summer high water temperatures would preclude the presence of cold water salmonid species during the proposed construction window, and (4) the project location is outside the known range of the species. The project would have no effect on coastal bull trout and disturbances due to construction and noise would be non-existent. The Skookumchuck River Levee rehabilitation project is expected to have no effect on coastal bull trout or any other sensitive, threatened or endangered species. Therefore, consultation pursuant to Sec. 7 of the Endangered Species Act is not required.

2. **Fish, crustaceans, mollusks and other aquatic organisms in the food web [230.31]**
   Vegetation removal would be minimal so impacts to fish due to vegetation removal are expected to be minor. Vegetation removal by USACE would occur only to access the sites and as necessary to repair the damaged area. Given the minimal amount of vegetation being removed, and in-water work being completed during the approved WDFW construction window, impacts to fish by the federal action are expected to be insignificant.

3. **Other wildlife [230.32]**
   Birds and other wildlife may be temporarily displaced during construction due to noise, construction vehicles, and materials placement. Because these impacts will occur only during the four weeks of construction, they are expected to be inconsequential and temporary.

Potential Impacts on Special Aquatic Sites [Subpart E]:

1. **Sanctuaries and refuges [230.40]**
   Not applicable.

2. **Wetlands [230.41]**
   A USACE biologist conducted a site visit and found no wetlands to be present in the project footprint. However, wetlands are present on the benches upstream of station 20+20 and stations 34+60 to 31+50.
3. **Mud flats [230.42]**
   Not applicable.
4. **Vegetated shallows [230.43]**
   Not applicable.
5. **Coral reefs [230.44**]
   Not applicable.
6. **Riffle and pool complexes [230.45]**
   The project would restore the levee to its pre-flood condition. The river in the project reach is largely a glide and does not include riffle and pool complexes.

Potential Effects on Human Use Characteristics [Subpart F]:

1. **Municipal and private water supplies [230.50]**
   Not applicable.
2. **Recreational and commercial fisheries [230.51]**
   The project would not have any long term effects on recreational and commercial fisheries.
3. **Water-related recreation [230.53]**
   During construction, the project may temporarily disrupt water-related recreation; however no long term effects would occur to recreation.
4. **Aesthetics [230.53]**
   There will be temporary construction-related aesthetic impacts as ground disturbance by heavy equipment occurs, generating noise and temporary minor air quality impacts. However, no long term aesthetic effects would occur.
5. **Parks, national and historic monuments, national seashores, wilderness areas, research sites and similar preserves [230.54]**
   Not applicable.

Evaluation and Testing [Subpart G]:

1. **General evaluation of dredged or fill material [230.60]**
   Fill material will be clean and from an approved source. The new levee prism will be constructed with 2,432 tons of fine grained levee embankment and 4,499 tons of rock (quarry spalls, Class III riprap). For access, 300 tons of 1 ¼" minus gravel will be used.

2. **Chemical, biological, and physical evaluation and testing [230.61]**
   Not applicable

Actions to Minimize Adverse Effects [Subpart H]:

1. **Actions concerning the location of the discharge [230.70]**
   The fill material will be placed along the toe of the levee.
2. **Actions concerning the material to be discharged [230.71]**
   Material will be imported from an approved, clean source.
3. **Actions controlling the material after discharge [230.72]**
   No actions should be required, as the structure is not expected to move after construction; however, should any structural deterioration occur, City of Centralia will be expected to address it as the owner or bring it to the attention of the Corps.
4. **Actions affecting the method of dispersion [230.73]**
   As described above, the structure is expected to be stable after construction and not disperse. Project drawings that show the design of the structure are included in the Environmental Assessment being developed for the project.
5. **Actions related to technology [230.74]**
   No specific advanced technologies will be used to repair this levee.
6. **Actions affecting plant and animal populations [230.75]**
   There will be temporary disturbance to wildlife in the project vicinity due to noise from operation of machinery. Because these impacts will occur only during the four weeks of construction, they are expected to be inconsequential and temporary. The landward slope of the levee will be hydroseeded.
7. **Actions affecting human use [230.76]**
   There will be temporary disruption to site users during construction, but little long-term impact will result. River recreation may be affected in the short-term; however in the long term, recreation should be unaffected.
8. **Other actions [230.77]**
   Best management practices (such as sediment erosion control) will be used to ensure that no unnecessary damage to the environment occurs during construction.

General Policies for Evaluating Permit Applications [33 CFR §320.4]

1. **Public Interest Review [320.4(a)]**
   USACE finds this levee repair action to be in compliance with the 404(b)(1) guidelines and not contrary to public interest.
2. **Effects on wetlands [320.4(b)]**
   No wetlands are within the project footprint.
3. **Fish and wildlife [320.4(c)]**
   Impacts of the proposed work on fish and wildlife are expected to be minimal. The USACE has consulted through a Notice of Preparation of an Environmental Assessment under NEPA, with state and federal resource agencies, tribes and other interested members of the public on this action. Impacts will be minimized—see 17 below.
4. **Water quality [320.4(d)]**
   USACE concludes that the project is functionally analogous to Nationwide Permit (NWP) 3 pursuant to Section 404 of the Clean Water Act. Furthermore, USACE has analyzed the project pursuant to the general conditions established by the State associated with authorization under NWP 3, and concluded that the proposed repair project satisfies those conditions; thus, extension of the State's general water quality certification under Section 401 of the Clean Water Act is fully justified. USACE has provided Ecology the opportunity to review the determination that the general certification applies by functional analogy. Ecology has determined that the general water quality certification associated with NWP 3 covers this project, and that individual water quality certification is thus not required. The work will be conducted to ensure that it does not contribute to exceedance

of state water quality parameters.

5. **Historic, cultural, scenic, and recreational values [320.4(e)]**
   An evaluation was conducted, and is referenced in this document. Coordination has taken place with affected tribes and with the Washington Deptartment of Archaeology and Historic Preservation (DAHP). USACE prepared a Section 106 compliance report and submitted it on 18 May 2009 to the Washington State Historic Preservation Officer (SHPO), requesting that the SHPO concur with a determination of "No Historic Properties Affected [with Conditions]" for the Skookumchuck River levee rehabilitation project. USACE has recommended archaeological monitoring at Skookumchuck River Levee. In a letter dated 20 May 2009 the SHPO concurred with USACE' determination.
6. **Effects on limits of the Territorial Sea [320.4(f)]**
   Not applicable, since the project will not occur in coastal waters.
7. **Consideration of property ownership [320.4(g)]**
   Access for construction equipment and materials will be via public rights of way and specific real estate rights of entry obtained by the non-federal cost-sharing sponsor, City of Centralia.
8. **Activities affecting coastal zones [320.4(h)]**
   Not applicable, since the project is not located in a coastal county.
9. **Activities in marine sanctuaries [320.4(i)]**
   Not applicable, since the area is not a marine sanctuary.
10. **Other federal, state, or local requirements [320.4(j)]**
    The Corps has prepared a NEPA Environmental Assessment.
11. **Safety of impoundment structures [320.(k)]**
    Not applicable, since an impoundment structure is not being built.
12. **Water supply and conservation [320.4(m)]**
    There will be no effects on water supply.
13. **Energy conservation and development [320.4(n)]**
    Not applicable.
14. **Navigation [320.4(o)]**
    No other navigational effects are anticipated.
15. **Environmental benefits [320.4(p)]**
    The project does not have any associated environmental benefits; however, the project provides flood protection to residents.
16. **Economics [320.4(q)]**
    The project has a positive benefit:cost ratio because of its protection of local infrastructure.
17. **Mitigation [320.4(r)].**
    The following measures will be taken to avoid and minimize impacts from the project (the project does not include any compensatory mitigation).

    USACE will take all practicable steps during construction of the project to minimize impacts to aquatic and terrestrial resources. Best management practices will be used. Contingencies will be in place if any of the water quality protection measures fail to achieve their intended function. The minimization measures will be as follows:
    - Best management practices (BMPs), such as stormwater runoff prevention, will be used to ensure that no unnecessary damage to the environment occurs;
    - USACE archaeologist will be onsite monitoring;
    - USACE biologist will regularly check on construction progress to ensure BMPs are in place and environmental impacts are properly avoided and minimized.

Appendix F: Finding of No Significant Impact

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

CENWS-PM-ER

FINDING OF NO SIGNIFICANT IMPACT

Skookumchuck River

Levee Rehabilitation of Flood Control Works
Lewis County, Washington

1. Background. The Corps is proposing the following project under the PL 84-99 Program (33USC 701n). Corps rehabilitation and restoration work under this authority is limited to flood control works damaged or destroyed by specific flood events. The repaired structures must be constructed to provide the same degree of protection as the original structure. In its pre-flood condition, the levee was designed to provide protection from the 4% (25-year) flood event.

On 3 and 4 December 2007, rainfall and snowmelt resulted in a 150 year peak flooding event on the Chehalis River. Flood flows in the Skookumchuck River were less severe; however flows were unable to exit into the Chehalis River. This backup and continued incoming flows caused flooding and erosion along the Skookumchuck River. During this event, the Skookumchuck Levee sustained damage in three places. Damages occurred along a total of 865 linear feet of the levee: 140 feet of toe scour from station 20+20 to 21+60; 325 feet of toe scour, riverward slope erosion and some seepage damage on the landward side from station 23+20 to 26+45; and 400 feet of toe scour and riverward slope erosion from station 34+60 to 38+60. As a result of request for Corps of Engineers assistance from City of Centralia, the Corps proposes to repair the levee as addressed in the Environmental Assessment (EA). These levees are integral to protecting life and property including public facilities and private residences in the flood plain.

The purpose of the proposed project is to repair the damaged portions of the Skookumchuck River levee to restore flood protection for the residences, businesses, and public infrastructure at the same level provided prior to the 2007 flood event.

2. Proposed Action. The full repair alternative re-establishes the levee toe and prism with 2H:1V riverward slope at the two upstream locations, and a 1.5H:1V riverward slope at the downstream location. The levee toe would be re-established at all three locations by excavating the riverward levee face and reworking the existing bank to re-establish a 3' X 5' toe at the two upstream locations and a 5' X 3' toe at the downstream location, using Class III riprap. The recommended repair would restore the levee back to the pre-flood 25-year level of protection.

At the repair location between stations 23+20 and 26+45, the crown would be extended landward by approximately 6 feet, and the landward slope would be steepened to 2H:1V, while remaining within the pre-existing levee footprint. At the repair location between stations 20+20 and 21+60 the project would create a 2' by 6' seepage berm on the landward side, thus enlarging the landward footprint by 6 feet as compared with the footprint pre-existing the flood event. Prior to construction, the levee repair locations would be cleared and grubbed. The scour and erosion damage would be repaired by excavating the existing levee prism and replacing the material using proper construction methods. The levee would be cut down where necessary and reconstructed per EM 1110-2-1913 chapter 7, table 7-1, Category II – semi-compacted construction method. The imported levee material shall be of similar gradation to the existing levee material.

After construction the repaired landward slopes would be hydroseeded with native grass seed mix to prevent erosion after construction. The repair includes construction of a willow lift to be placed just above ordinary high water at each of the two upstream repair locations. All necessary measures including irrigation would be taken to maximize the potential for planting success.

3. Summary of Impacts and Compliance. Pursuant to the National Environmental Policy Act, the attached EA has been prepared. The EA provides an evaluation of the potential environmental impact of the proposed work which is briefly summarized below.

Potential environmental impacts of the preferred alternative include short term effects to water quality, and fish and wildlife. The effects to these resources would be minimal and occur during construction; no long term effects would occur. There may be water quality impacts such as an increase in turbidity during construction. Equipment would not enter the water and would remain on dry ground at all times. Most birds, mammals, and other wildlife would be disturbed by construction activities but would be able to recolonize remaining habitat in the vicinity of the project area.

USACE has determined that project is functionally analogous to conditions that would fall under Nationwide Permit (NWP) 3 pursuant to Section 404 of the CWA. Because Lewis County is outside Washington's coastal zone and the project is not expected to have impacts on the resources and uses of the coastal zone, a Coastal Zone Consistency Determination is not required as part of the preferred alternative. USACE has determined the preferred alternative will have "no effect" on ESA-listed species. Under Section 7 regulations, if USACE determines the proposed action will have "no effect" on ESA-listed species, it is not required to consult with the Services. The project has complied with the National Historic Preservation Act and USACE has notified all recognized Native American Tribes in the project vicinity.

4. Finding. I have determined that the proposed project has been fully evaluated in the accompanying environmental documentation, and that planning for this project complies with all applicable laws, regulations, and agency consultations including the Clean Water Act and

National Environmental Policy Act. Based on the analysis described above and provided in more detail in the Environmental Assessment, this project is not a major Federal action significantly affecting the quality of the human environment and, therefore, does not require the preparation of an environmental impact statement.

18 MAY 2011
Date

ANTHONY O. WRIGHT
Colonel, Corps of Engineers
Commanding