

FINAL ENVIRONMENTAL ASSESSMENT

NISQUALLY PARK LEVEE REPAIR

REHABILITATION OF FLOOD CONTROL WORKS PIERCE COUNTY, WASHINGTON



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

June 2011



TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Project Location and Description	1
1.2	Project Purpose and Need	1
1.3	Authority	2
2.0	ALTERNATIVES CONSIDERED	3
2.1	No-Action Alternative.....	3
2.2	Non-Structural Alternative.....	3
2.3	Setback Alternative	3
2.4	Repair in Place (Preferred Alternative).....	3
3.0	EXISTING CONDITIONS.....	7
3.1	Physical Characteristics.....	7
3.2	Water Quality	7
3.3	Vegetation	8
3.4	Fish and Wildlife.....	9
3.5	Threatened and Endangered Species.....	10
3.6	Cultural Resources and Native American Concerns	13
3.7	Land Use	13
3.8	Recreational Use	14
3.9	Air Quality and Noise	14
3.10	Transportation and Infrastructure	14
3.11	Aesthetics.....	14
3.12	Economics	15
4.0	ENVIRONMENTAL EFFECTS OF THE PREFERRED ALTERNATIVE.....	15
4.1	Physical Characteristics.....	15
4.2	Water Quality	16
4.3	Vegetation	17
4.4	Fish and Wildlife.....	18
4.5	Threatened and Endangered Species.....	19
4.6	Cultural Resources and Native American Concerns	20
4.7	Land Use	21
4.8	Recreational Use	22
4.9	Air Quality and Noise	22
4.10	Transportation and Infrastructure	24
4.11	Aesthetics.....	24
4.12	Economics	25
4.13	Unavoidable Adverse Effects	26
4.14	Mitigation	26
4.15	Cumulative Effects	27
5.0	COMPLIANCE WITH LAWS, REGULATIONS AND EXECUTIVE ORDERS	28
5.1	Federal Statutes	28
5.2	Executive Orders	31
6.0	Coordination and Comments	32
7.0	CONCLUSION.....	33

8.0	REFERENCES	33
9.0	PREPARERS	35

LIST OF FIGURES

Figure 1. Site location showing the entire levee with the damaged portion (red line) and the area protected by the levee (shaded yellow).....	2
Figure 2. Photos of the repair area showing oversteepened bank and loss of armor rock.....	4
Figure 3. Typical cross section of the repair area.	5
Figure 5. Water quality map. The project area is denoted by the black rectangle.....	8
Figure 6. Aerial view of vegetation in the project area.....	9

LIST OF TABLES

Table 1. Federally threatened and endangered species occurring in Mount Rainier National Park.	11
Table 2. Estimated emission (tons) of air pollutants and green house gases	24

LIST OF APPENDICES

- APPENDIX A: Tribal and SHPO Coordination
- APPENDIX B: Endangered Species Act Coordination
- APPENDIX C: Storm Water Pollution Prevention Plan
- APPENDIX D: Clean Water Act 404(b)(1) Evaluation
- APPENDIX E: Finding of No Significant Impact

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (Corps), Seattle District, in concert with Pierce County Public Works, is proposing to repair damage to levees on the Nisqually River near Ashford, Pierce County, Washington and the entrance to the Mount Rainier National Park. Work is scheduled to be conducted in the summer of 2011.

Flooding occurred on the Nisqually River in November 11-13th, 2008 with a 13-year flood event occurring at the National gauge. Intense rainfall and rapid snowmelt were a result of a high velocity jet stream which is a common weather pattern experienced in this region. High velocity flows resulted in toe scour and loss of embankment material and riverward armor along the Nisqually Park Levee. Many reaches along the damaged levee are over-steepened and are missing riverward slope armor. Toe rock is missing along most of the damaged reach, with many large rocks visible in the current river channel. In the current condition, the levee offers 5-year level of flood protection. With repair, the levee will be restored to the pre-event, 20-year level of protection.

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

1.1 Project Location and Description

This non-Federal rural county levee was constructed to provide protection from the periodic recurring flooding of the Nisqually River near Mount Rainier National Park in Pierce County, Washington. The levee is located at the southwestern corner of the Mount Rainier National Park at approximately River Mile 67.6 to 68.6, near the town of Ashford within Pierce County Washington (Figure 1). The levee is located within Township 15 North, Range 7 East, in the southern half of Section 33, Western Meridian.

The levee is approximately 5,000 LF and is 10-12 feet high on the landward side. The top width varies from 15 to 27 ft. The riverward slope was built at a 3H:1V slope. The levee is predominantly composed of local borrow material with Class V and 3-4 man rock erosion protection on the riverward slope and 6-8 man rock at the toe. The levee was originally designed and constructed to provide a 20-year level of protection. The area is within the historic floodplain of the Nisqually River, and contains multiple single-family residences and summer cabins and associated roads. Highway 706, the only road leading into the southwestern portion of Mount Rainier National Park is also protected by the levee.

1.2 Project Purpose and Need

1.2.1 Purpose

The purpose of the project is to repair and return the damaged levee to the level of flood protection found prior to the November 2008 flood event in order to protect lives and property from subsequent flooding.

1.2.2 Need

Flood waters resulted in toe scour and loss of embankment material and riverward armor along the Nisqually Park Levee. Reaches along the damaged levee are over-steepened with slopes varying from 1.5H:1V to vertical. Several areas at the upstream end are missing 50-100% of the riverward slope. Toe rock is missing along most of the damaged reach and has moved into the

current river channel. The total length of the damaged area was 1,700 feet. In the current condition, the levee offers 5-year level of flood protection. With repair, the levee will be restored to a 20-year level of protection.



Figure 1. Site location showing the entire levee with the damaged portion (red line) and the area protected by the levee (shaded yellow).

This levee is integral to the protection of public safety and property. Emergency interim repairs were completed by Pierce County to the western 600 feet of the damaged section. Their interim repair was completed to the same design specifications as the proposed PL84-99 repair. The remaining damage could present a threat of loss of private and/or public property. There are numerous structures protected by this levee, including residences, businesses, historic landmarks, hotels, and the main entrance into Mount Rainier National Park. An evaluation of the parcels in the immediate vicinity of the flood plain covered a little over 700 acres and showed 86 structures. The need for this project is to ensure that the levee is returned to the pre-damage level of protection in order to minimize chances of levee damage or breaching from a major flood.

1.3 Authority

The proposed levee repair is authorized by Public Law 84-99 (33 U.S. Code Section 701n). Corps rehabilitation and restoration work under this authority is limited to flood control works damaged or destroyed by floods. The regulations implementing the statute authorize rehabilitation to the condition and level of protection exhibited by the flood control work prior to

the damaging event, with modifications to those facilities authorized under limited circumstances in order to preserve the structural integrity of non-Federal projects.

2.0 ALTERNATIVES CONSIDERED

Alternatives considered under NEPA must include the proposed action (Preferred Alternative), and the No-Action alternative, as well as other reasonable alternatives that meet the goal of the proposal. Multiple alternatives were considered including the No-Action Alternative, the Non-Structural Alternative, the Setback Alternative, and the Repair In Place Alternative (the Preferred Alternative). In order for any alternative to be acceptable for consideration, the selected alternative must meet the project purpose and need, be economically justified, be environmentally acceptable, and should minimize costs for 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 damaged condition and taking no action to address the damage incurred in the 2008 flood. This alternative has high potential for flood damage to the protected structures and lands behind the levee in the vicinity of the damaged levees, and thus would not meet the project purpose and need.

2.2 Non-Structural Alternative

The Non-Structural Alternative would relocate or flood proof all structures, utilities, and infrastructure within the damage area protected by the levee. However, relocation or flood proofing all of the protected infrastructure quickly, to avoid prolonging vulnerability through the upcoming flood seasons is impractical and expensive. There are 86 structures in the 700 acres of protected floodplain as well as roads and historic resources within the Mount Rainier National Historic Landmark District. The non-structural alternative was eliminated from further consideration because costs associated with flood proofing or relocating the structures in the potential inundation area would significantly exceed the cost of repairing the damaged levee.

2.3 Setback Alternative

The Setback Alternative would realign the levee behind the existing levee footprint to allow the Nisqually River more conveyance through the project reach. This alternative would involve the purchase and relocation of the properties behind the levee, in addition to the cost of constructing the new setback levee. This alternative would also have environmental effects associated with construction of the new levee, including the clearing of riparian vegetation.

2.4 Repair in Place (Preferred Alternative)

The Repair in Place Alternative would repair the damage to the levee toe and face and return the levee to its pre-flood level of protection. This alternative would consist of excavating 10 to 12 feet below the toe of the levee to create a new toe of buried 10 to 15 ton rock. The riverward face of the levee would be regraded to a 3H: 1V slope. A two foot layer of eight to 10 inch spalls would be placed on the riverward face as a filter layer. This would be overlain with a 4.5 ft thick blanket of two to four ton rock armor installed from the toe to the crown. Heavy loose riprap would be mixed with the toe and face rock to achieve satisfactory compaction and fit of the materials. A six-inch gravel lift would be installed along the top of the levee crown to create a drivable surface for inspection and maintenance access. Placement of the toe rock would require diverting the water away from the work site into an ancillary channel to complete the repair in the dry. This is required for safety during construction and would minimize adverse effects on

water quality and fisheries resources. The loss of riparian vegetation would be minimized and no wetland areas would be impacted. The Corps would use both existing and imported rock material. This project would also incorporate water quality monitoring and fish exclusion efforts to minimize effects on the aquatic and terrestrial resources in the area.

This alternative was recommended as the proposed action (preferred alternative) because it was the least environmentally damaging and lowest cost alternative that would provide flood protection similar to the rest of the levee segment.



Figure 2. Photos of the repair area showing oversteepened bank and loss of armor rock.

2.4.1 Description of the Proposed Action

The Preferred Alternative, which would continue protecting the infrastructure and property behind the levee and would minimize environmental impact, is to Repair In Place as described above. Pierce County completed 600 ft at the western end of the damage in September 2010. The final repairs (1100 ft) would be completed in August 2011. Because Pierce County will receive credit for their portion of the repair, the full Federal project includes the 2010 completed work as well as the 2011 proposed construction, for a total length of 1700 ft.

The Nisqually Park Levee access route is along existing asphalt and gravel roads and along the top of the levee. A temporary turn around area was cleared and flattened during the Pierce County portion of the work. This established turn around would be used for the 2011 construction period as well. Storage and staging at the project location would consist of excess rock and temporary storage of equipment and vehicles. This staging would occur along the top of the levee. Areas disturbed by levee construction, staging activities or road access would be reseeded with native grasses at the end of construction to control erosion.

The thalweg of the river can shift during high water events, but it currently flows directly adjacent to the repair area. If this is the case at the time that construction is set to begin, then the water would be diverted away from the project location into an existing side channel. The diversion berm would be accomplished using in channel materials including woody debris, gravels and boulders and may require some excavation to deepen the side channel. The diversion would be consistent with Washington State Hydraulic Code (WAC 220-110-120 and

WAC 220-110-080). The diversion would be removed at the end of construction to allow the river to return to its normal course.

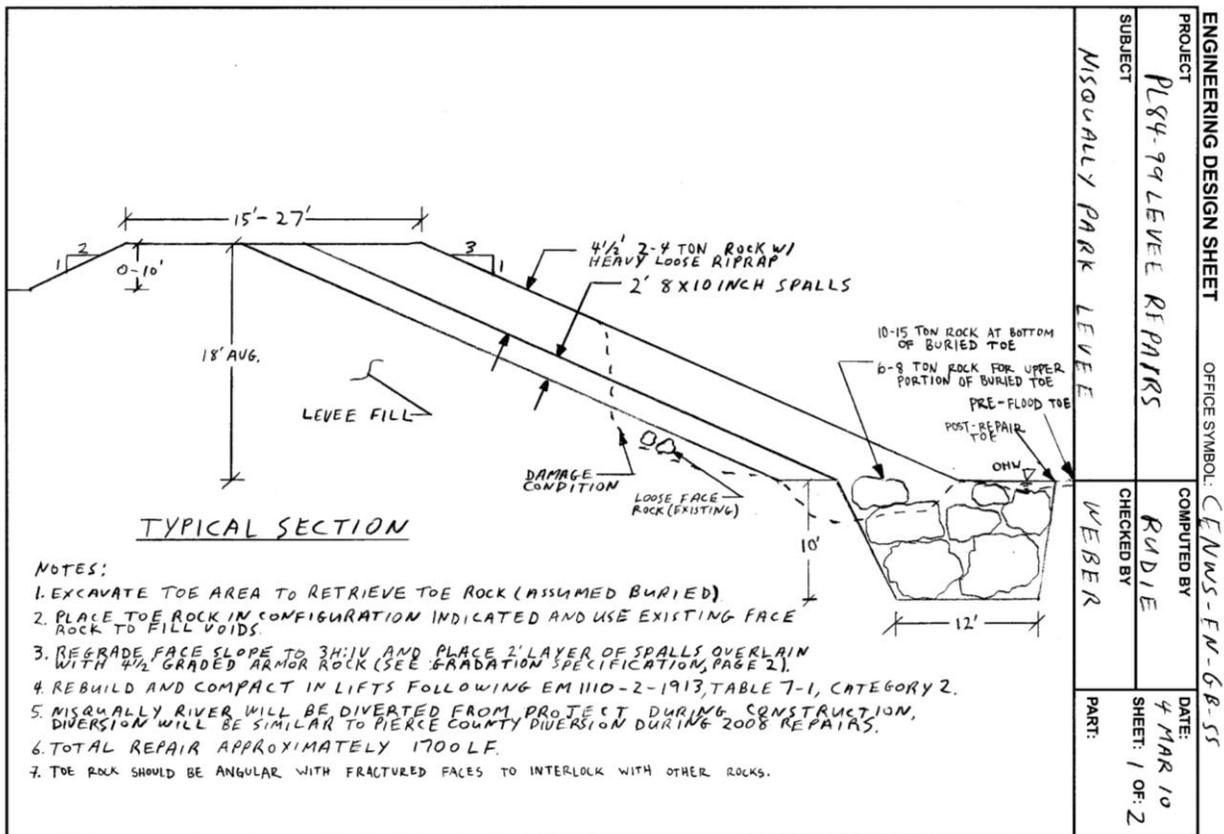


Figure 3. Typical cross section of the repair area.

The toe of the levee would be excavated for the creation of the buried toe. A trench 10 to 12 ft deep and 12 feet wide would be dug at the toe of the levee. The levee face would also be excavated to remove sloughed levee material and allow space for to accommodate a two-foot filter blanket of spalls and a 4.5 foot blanket of riprap armor protection at a 3H:1V slope. Trees along the riverward face throughout the site would be removed to facilitate construction. The removed vegetation on the riverward face includes two stands of conifers. No vegetation on the backslope would be removed for this repair.

A blanket of spalls would be placed onto the excavated riverward face of the levee embankment material to act as a filter. Large armor rock would then be placed along the riverward face on top of the spalls. The purpose of this armor is to ensure adequate erosion resistance. Armoring would continue upslope until flush with the crown of the levee. River gravel would be used to cover the toe and armor rock to fill the interstices and improve aesthetics.



Figure 4. Potential diversion locations.

As the river channel has the potential to reorganize with high water events, a definitive layout for the diversion is not possible. The final diversion effort will depend on the existing site conditions at the time of construction. Two possible berm locations with three potential diversion channel locations (see Figure 4) were chosen based on aerial photos as likely scenarios. The decision between the alternatives will be made at the time of construction with the deciding factors being length of diversion as it relates to fish impacts and salvage efforts, and the cost and time requirements for the construction efforts needed to create the diversion berm and channel. The side/diversion channel will likely range from 1,250 ft to 2,700 ft. The length of main channel to be diverted ranges from 1,200 ft to 2,600 ft. The Corps will ensure that a flowing channel is maintained throughout construction.

3.0 EXISTING CONDITIONS

3.1 Physical Characteristics

The project area extends along the right bank of the river between river miles 67.6 to 68.6 and includes the approximately 1,100-foot segment of the damaged levee. The area of effect extends from the project site downstream approximately 500 feet for aquatic species and includes a one-mile radius from the project area for terrestrial species. Staging for the repair work would be accomplished on the levee; the site would be accessed via the existing access road on top of the levee.

The topography in the immediate project area is a broad expanse of relatively flat river floodplain along the southern, left bank of the river and a more narrow band of floodplain along the northern, right bank of the river (Figure 1). Throughout the project area, the Nisqually River is a broad, dynamic reach with a braided channel and an approximately 1 percent slope. The entire Nisqually River basin encompasses approximately 760.9 square miles, of which the upper basin (above the La Grande dam) encompasses approximately 289.2 square miles (Nisqually Watershed Planning Group 2002). The Nisqually River levee is located within the upper river basin. The upper river basin is geologically dominated by andesite (lava) flows, volcaniclastic rocks, and undifferentiated glacial drift. (Nisqually Watershed Planning Group 2002).

The upper river basin supplies approximately 60 percent of the total flow of the Nisqually River. Stream flow measurements have been recorded approximately 10 miles downstream of the levee at a U.S. Geological Service stream gauge near the town of National (USGS 12082500). Based on data recorded at this gauge, average annual stream flow between 1943 and 2010 has been approximately 770 cubic feet per second (cfs). Monthly stream flow varies through the year with May and June recording the highest average monthly stream flows (1,050 and 1,060 cfs, respectively) due to annual snowmelt upstream on Mount Rainier. September and October are the driest months, with average monthly stream flows of approximately 428 and 458 cfs, respectively. Peak stream flows have varied between 1,910 cfs recorded on September 4, 1977 and the flood of record on November 6, 2009, which was a 21,800-cfs event with 12.82 feet of water recorded at the gauge.

3.2 Water Quality

In the Nisqually Basin, total maximum daily loads (TMDLs) have been set for fecal coliform, and dissolved oxygen. The particular reaches of concern for the TMDLs are all low in the watershed. There are no 303(d) listings for the project area though a few tributaries nearby have

noted temperature concerns. Figure 5 shows the Washington State Department of Ecology (Ecology 2011) 303(d) map for the project vicinity.

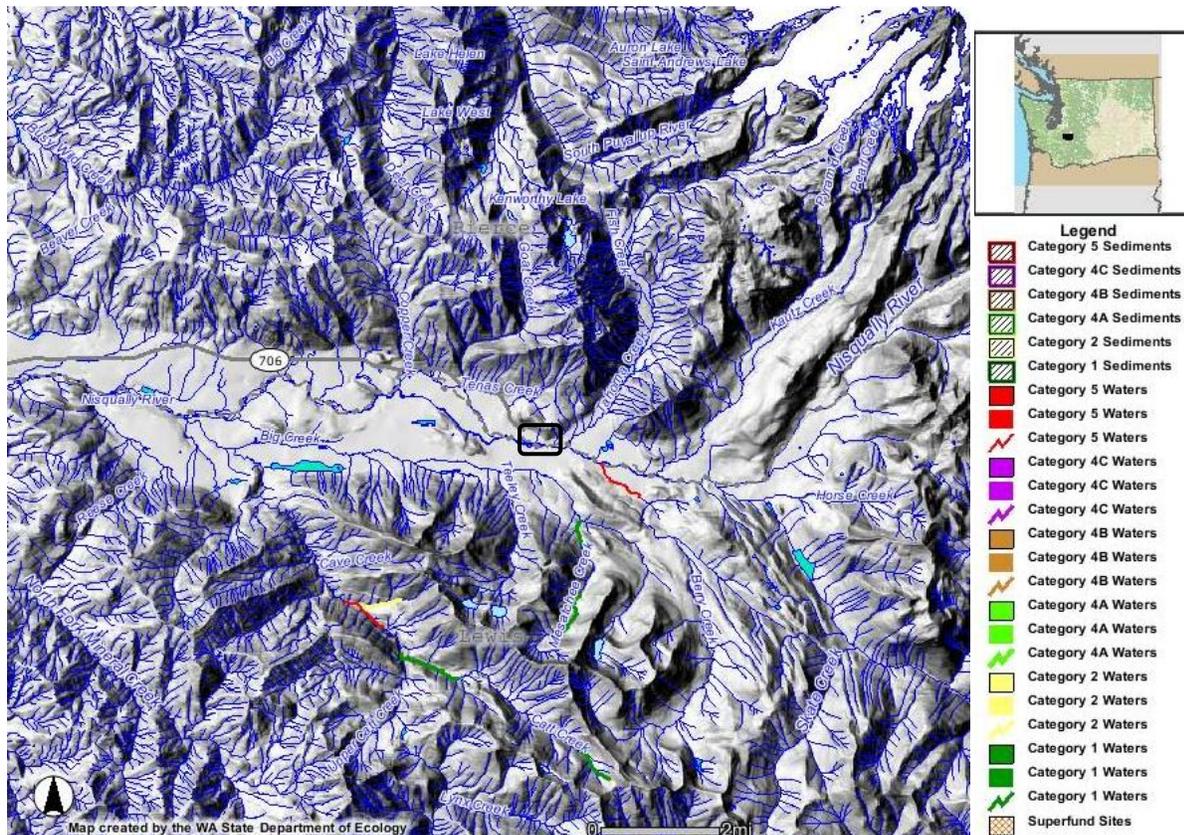


Figure 5. Water quality map. The project area is denoted by the black rectangle.

3.3 Vegetation

The levee traverses the boundary of the Mount Rainier National Park. As such the protected area behind the levee is dominated by forested areas interspersed with home sites, small-businesses catering to tourists, and small farms.

The top and riverward side of the levee are predominantly bare armor rock on the riverward face and gravel on top to maintain a driveable surface. The edges of the access road on top of the levee outside the Park include invasive Scot’s broom (*Cytisus scoparius*) and Himalayan blackberry (*Rubus discolor*) shrubs. There are no wetlands present within the project footprint.

The backside of the levee supports stands of mixed coniferous forest dominated by Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), sword fern (*Polystichum munitum*), and Cascade Oregon-grape (*Mahonia nervosa*). There are a few conifers on the riverward face of the levee. Figure 6 shows the vegetation in the project area with the top of the levee visible as the linear, cleared area. The levee widens and has no riverward vegetation west (outside) of the park boundary.

The left bank of the river and its associated floodplain are dominated by black cottonwood (*Populus balsamifera*), Douglas fir, western red cedar, and red alder trees with a dense

understory of salmonberry (*Rubus spectabilis*) shrubs (as viewed through binoculars from the right bank of the river at the project site).



Figure 6. Aerial view and photo of vegetation in the project area.

3.4 Fish and Wildlife

The Nisqually River supports nine species of salmon and trout (Cook-Tabor 1999, Nisqually Watershed Planning Group 2002). Pacific salmon species recorded within the Nisqually River are: summer/fall chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), winter chum (*O. keta*), odd-year pink (*O. gorbuscha*), and sockeye (*O. nerka*). Trout species recorded within the Nisqually River include Dolly Varden (*Salvelinus malma*), bull trout (*S. confluentus*), steelhead (*O. mykiss*), and cutthroat trout (*O. clarki*). However, the Alder and La Grande dams limit anadromous species to the mainstem and tributaries below the dams. Consequently, there are no anadromous species within the reach of the river adjacent to the project site. Bull trout would also not be expected to be in the river at the project site. Bull trout have not been documented as occurring in the Nisqually River (Samora et. al 2009)

Based on the appearance of fairly undisturbed forest and riparian conditions, complex forest structure with good stratification of vegetation layers and the presence of downed wood and snags, the immediate vicinity of the levee likely supports a wide variety of wildlife species. A search of the WDFW PHS database revealed a number of federal or state priority species that have been recorded in the surrounding area.

The area surrounding the levee would be considered high quality habitat for large mammals such as black-tailed deer (*Odocoileus hemionus columbianus*), elk (*Cervus elaphus*), black bear

(*Ursus americanus*), coyote (*Canis latrans*) and cougar (*Felix concolor*). Smaller mammals such as beaver (*Castor canadensis*), mink (*Mustela vison*), river otter (*Lutra canadensis*), bobcat (*Lynx rufus*), Douglas squirrel (*Tamiasciurus douglasii*), and porcupine (*Erethizon dorsatum*) also likely inhabit the riparian area. Due to the presence of tree, shrub, and herbaceous vegetation layers and the presence of downed wood and snags, it is also likely that pileated woodpeckers (*Dryocopus pileatus*), downy woodpeckers (*Picoides pubescens*), and hairy woodpeckers (*Picoides villosus*), barred owls (*Strix varia*), great-horned owls (*Bubo virginianus*), bats, neo-tropical migratory songbirds, and raptors such as goshawk (*Accipiter gentiles*), and red tailed hawk (*Buteo jamaicensis*) inhabit the riparian areas along the river.

The riparian area also likely supports birds such as great-blue herons (*Ardea herodias*) and belted kingfishers (*Ceryle alcyon*) that feed on fish and amphibians in the floodplain of the river. Resident amphibians likely to inhabit the shoreline area include red-legged frogs (*Rana aurora*), Pacific chorus frogs (*Hyla regilla*), long-toed salamander (*Ambystoma macrodactylum*), and rough skinned newt (*Taricha granulose*). Tailed frogs (*Ascaphus truei*) have been recorded within the extremely cold, upper reaches of the Nisqually River, more than five miles upstream of the levee (WDFW PHS database search March 15, 2004). Resident reptiles include the garter snake (*Thamnophis sirtalis*) and possibly northern alligator lizard (*Gerrhonotus coeruleus*). More interior old-growth forested habitats also support marbled murrelet (*Brachyramphus marmoratus*) and northern spotted owl (*Strix occidentalis occidentalis*) nesting.

Wolverines (*Gulo gulo*), gray wolves (*Canis lupus*), fishers (*Martes pennanti*), and Larch Mountain salamanders (*Plethodon larselli*) have also been recorded in the forests along the upper Nisqually River (WDFW PHS database search March 15, 2004). Section 3.5 below discusses the occurrence of species listed under the Endangered Species Act.

3.5 Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. A Biological Evaluation (BE) of potential impacts to endangered and threatened species within the project area is prepared to meet these requirements. The BE was submitted to the US Fish and Wildlife Service (USFWS) on 20 April 2011.

Table 1 shows the listed species potentially present in Mount Rainier National Park. Seven of these species are listed as threatened under the ESA: northern spotted owl, marbled murrelet, Canada lynx (*Lynx canadensis*), grizzly bear (*Ursus arctos*), Chinook salmon, bull trout, and steelhead. There is also one candidate species, fisher (*Martes pennanti*) and one proposed species, Dolly Varden (*Salvelinus malma*).

Table 1. Federally threatened and endangered species potentially occurring in Mount Rainier National Park.

SPECIES NAME (Scientific Name)	Federal Status	Habitat present in or near project area?	Species documented in or near project area?	Effect Summary – Action Alternative
Northern Spotted Owl (<i>Strix occidentalis caurina</i>)	FT	Yes	No	No Effect
Marbled Murrelet (<i>Brachyramphus marmoratus marmoratus</i>)	FT	Yes	Yes	NLAA
Fisher (<i>Martes pennanti</i>)	FC	Yes	No	No effect
Canada Lynx (<i>Lynx canadensis</i>)	FT	Yes	No	No effect
Grizzly Bear (<i>Ursus arctos horribilis</i>)	FT	Yes	No	No effect
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) (Puget Sound Evolutionarily Significant Unit)	FT	No	No	No effect
Bull Trout (<i>Salvelinus confluentus</i>)	FT	No	No	No effect
Steelhead (<i>Oncorhynchus mykiss</i>)	FT	No	No	No effect
Dolly Varden (<i>Salvelinus malma</i>)	FPROP	No	No	No effect

FT= Federally Threatened

FE= Federally Endangered

FC= Federal Candidate

FPROP = Federal Proposed for Listing

NLAA=May affect, not likely to adversely affect

3.5.1 Northern spotted owl.

The northern spotted owl is a medium sized nocturnal owl that preys primarily on small mammals. The owl is strongly associated with old growth forests that are structurally complex (characterized by multi-storied canopies, several species of trees, sizes, and ages, and standing and downed dead trees). Moreover, the birds require large amounts of suitable habitat. Median home range sizes are typically on the order of 3,000 to 5,000 acres per pair. Spotted owls nest in cavities or platforms in trees and pairs are typically spaced about one to two miles apart. Northern spotted owls are long lived, territorial birds, and often spend their entire adult life in the same territory. Critical habitat has not been formally designated for northern spotted owls in Mount Rainier National Park.

Northern spotted owl pairs begin to nest in February or March. In late March or early April, the female will lay one to three eggs. Young are fed by both parents until August or September, although fledging may occur in May or June, and by October the young disperse from the nest site. Northern spotted owls' nesting and fledging season in Mount Rainier National Park extends from March 15th through September 30th. Nest trees may include: Douglas fir, grand fir, Pacific silver fir, and other species. Nests are usually found in forests up to 4,800 feet in elevation. Mount Rainier National Park contains a mosaic of old growth forest ecosystems, which encompasses an estimated 33,208 hectares (80,060 acres) of suitable spotted owl habitat within the Park (Myers and Schaberl 2008).

Surveys of northern spotted owls have been conducted in the Park since 1983, with consistent annual monitoring beginning in 1997. In 2009, 26 owl territories, and five additional potential territories were monitored as part of the Rainier Northern Spotted Owl Demographic Study Area (Myers and Herter 2009). In 2009, no young were produced; however this trend generally follows the expected alternating year nesting sequence of the owl. In 2008, an average of 0.64 young fledged per territorial female (Myers and Schaberl 2008).

The forest adjacent to the levee where it crosses the boundary of Mount Rainier National Park is young, is not considered suitable habitat, and the work area is greater than 45 yards from suitable habitat (NPS 2010). The nearest known spotted owl territory center is located approximately 3.5 km away. Calling surveys have been conducted annually along the roadway adjacent to the project, and none have detected use of the area by spotted owls.

3.5.2 Marbled murrelet.

Marbled murrelets are marine birds that forage in near shore environments from northern California up through Alaska and are year round residents on coastal waters. They typically nest high in the canopy of old growth forests or stands of large trees infected with mistletoe. Within the Mount Rainier National Park, approximately 23,000 acres of forested area are defined as suitable murrelet nesting habitat. High quality habitat is distributed along the western boundary of the Park in valleys running east and west separated by high elevation ridges. Lower quality, but suitable habitat, continues along the southern and southeastern areas of the park. Critical habitat for marbled murrelet has been designated within Lewis and Pierce Counties, but the designation does not include the Park because these lands are protected. Within the Park, the presence of murrelets has been documented within four river corridors: the Carbon, Mowich, Puyallup, and Nisqually Rivers (NPS 2008). Audiovisual surveys have detected breeding behavior (sub canopy flights) in the Carbon, Mowich, and Puyallup rivers. Thus, these drainages are considered “occupied” per FWS guidelines. Repeated radar surveys along the Nisqually River at Kautz Creek and Tahoma Creek confluences have detected very few (mean 4.7 per day, range 1-12) murrelet targets, suggesting that the Nisqually River contains few murrelets (Hamer Environmental 2000; ABR, Inc. 2009). No active nests have been identified within the Park; however nest surveys have been few and limited to the Carbon River drainage.

The forest adjacent to the project is considered suitable marbled murrelet habitat. The forest adjacent to the levee where it crosses the boundary of Mount Rainier National Park is young, is not considered suitable habitat, and the work area is greater than 35 yards from suitable habitat (Vince Harke, USFWS, personal communication).

3.5.3 Fisher

Historically, fishers were widely distributed in Washington in dense, mesic forests at low- to mid-elevations. The Park contains extensive fisher habitat. They have not been documented in the Park since 1947. However, unconfirmed reports of the fisher occurred at the Park in the 1990s (NPS 2008). Small carnivore surveys were completed throughout the park in 2001-2002, and no evidence of the fisher was recorded.

3.5.4 Canada lynx

The lynx is the rarest of three cat species native to Washington (lynx probably number fewer than 100 individuals in the state). They are primarily associated with subalpine and boreal forest types in the mountains of north central and northeastern Washington, and formerly occurred in the southern Cascades. Topographic relief gives these forests a patchy distribution which in turn

affects their potential to support lynx (Stinson 2001). Mount Rainier National Park contains suitable habitat for lynx and their favorite prey, the snowshoe hare, in subalpine areas below the tree line. Despite extensive small carnivore surveys completed 2001-2002, there have been no confirmed reports of this species in the Park since 1934 (NPS 2008).

3.5.5 Grizzly bear

Grizzly bears in Washington are rare, but a limited number are still present, primarily in the northern part of the state. This species prefers open shrub communities, alpine and low elevation meadows, riparian areas, seeps, alpine slab rock areas, and avalanche chutes. The Park contains suitable grizzly bear habitat. However, there has never been a confirmed sighting of grizzlies in the Park. In 1993, grizzly bear tracks were identified by the WDFW, adjacent to the west side of the Park (NPS 2008).

3.5.6 Anadromous salmonids

Two anadromous fish species (the Chinook salmon and steelhead) have the potential to occur within the Park, and may occur in the Carbon River. Anadromous species do not occur in the Nisqually River upstream of Alder Creek Dam.

3.5.7 Bull trout

In Mount Rainier National Park, bull trout are known to exist in the White, West Fork, Carbon, Mowich and Puyallup rivers and their tributaries. Park biologists have indicated that bull trout may be present in the Ohanapecosh River. Bull trout have not been documented as occurring in the Nisqually River (Samora et. al 2009).

3.5.8 Dolly Varden trout

The Dolly Varden trout is proposed for federal listing because of the “similarity in appearance provision” of the ESA (66 FR 1628) to bull trout. They occupy the same habitats and have nearly indistinguishable characteristics from bull trout and belong to the same genus (*Salvelinus* or also known as Char). Recent DNA analysis conducted on native char in the Park suggests that only bull trout are present in the Park streams today (NPS 2008). Dolly Varden are not found in the Nisqually River within the Park nor the project area.

3.6 Cultural Resources and Native American Concerns

The project area is located within the traditional territory of the Nisqually Tribe. Several Nisqually village locations are located within a 10 to 15 miles vicinity of the project area. Historic documents and ethnographic accounts indicate that Mount Rainier National Park was used for resource gathering and hunting of large game (Carpenter 1994; Carpenter 2002; Smith 1940; Smith 2006). Prior to the creation of Mount Rainier National Park in 1899, mountain guides were taking tourists up to the mountain and in 1889 a bath house and “spa” was located in Longmire and operated by the Longmire family.

Background research indicates that the vicinity of the project area could contain a wide variety of cultural resources including precontact camps, fire cracked rock concentrations, stone tools assemblages; historic artifacts and features relating to flood control structures, creation of Mount Rainier National Park; roads, agricultural and house hold materials.

3.7 Land Use

The project area is located just inside the southwestern corner of Mount Rainier National Park, which is federally owned land. The levee protects a little over 700 acres with 86 structures that

includes residences (both seasonally occupied and permanent residences), historic landmarks, hotels, the main entrance into Mount Rainier National Park, and associated public infrastructure including State Route 706.

3.8 Recreational Use

The levee is within Mount Rainier National Park. Generally, 1.5 - 2 million people visit Mount Rainier each year. In 2010, the park had 1,731,913 visitors (NPS 2011). Recreational opportunities within the area include, but are not limited to, passive recreational pursuits such as sightseeing, wildlife observation, mountain/rock climbing, camping, photography, hiking, fishing and boating.

3.9 Air Quality and Noise

Air quality in the upper Nisqually Basin is within the Environmental Protection Agency's (EPA) standards for all air quality parameters (EPA 2007). Construction vehicles and personal vehicles would release greenhouse gases during the construction of this project. The EPA creates regulations as required by the Clean Air Act. Areas of the country where air pollution levels persistently exceed the national ambient air quality standards are designated as "non-attainment" areas. The EPA has set *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) for non-attainment areas, however, there have been no standards set for green house gas emissions in Washington State. In Washington, the Seattle-Tacoma area is the only designated non-attainment area and this is due to particulate matter (PM2.5) levels (EPA 2011a).

Noise levels are not elevated in the vicinity of the proposed levee repair. Existing noise and disturbance levels are typically fairly low within the majority of the project area and likely limited to traffic along Highway 706 and local vehicular traffic.

3.10 Transportation and Infrastructure

Traffic within the vicinity of the levee is limited to local traffic throughout the residential area protected by the levee, local traffic through and between the towns of Ashford, National, and Elbe, traffic into and out of Mount Rainier National Park on Highway 706. Due to its gradient and flows, vessel traffic on the Nisqually River is limited to small fishing boats and hand launched vessels such as canoes and kayaks.

The levee protects the local roads and driveways, as well as other public infrastructure such as electrical and telephone lines and the main entrance into Mount Rainier National Park with its associated structures. Homes in the vicinity of the levee appear to function on septic systems rather than on public sewer system.

3.11 Aesthetics

Due to its largely undeveloped character, visual and aesthetic resources along the majority of the upper Nisqually River are valued by residents and visitors. Scenery and visual attractions in the immediate vicinity of the levee are limited to the river corridor and its adjacent riparian areas along this reach of the river. The landscape elements of landform, vegetation, water, color, and related factors have been impaired by the levee and its access road, but improve upstream along the river beyond the levee.

3.12 Economics

Nisqually Park Levee provides protection to a community of single family residents and vacation residences, there are approximately 86 structures protected by this section of levee. In addition, there are historic landmarks, hotels, the main entrance into Mount Rainier National Park, and associated public infrastructure including State Route 706.

In preparing a cost and benefit feasibility assessment for any emergency project the Chief of Engineers shall consider the benefits to be gained by such a project for the protection of residential establishments, commercial establishments to include the protection of inventory, and agricultural establishments to include the protection of crops. The benefit to cost ratio (BCR) must be greater than 1.0 for the rehabilitation to be justified.

There are numerous structures in the community protected by this levee, including residences, businesses, historic landmarks, hotels, and the main entrance into Mount Rainier National Park. There are multiple parcels of land with numerous buildings in the flood plain. An evaluation of the parcels in the immediate vicinity of the flood plain covered a little over 700 acres and showed 86 structures with a total depreciated replacement value of approximately \$4,541,000. If the levee is not repaired the expected annual damages (EAD) to just these 86 structures and their contents are approximately \$405,000. Annual benefits are the difference between the with and without project EAD. The EAD is the probability weighted sum of damages from the without project level of protection event (5 year) to the with project level of protection (20 year). With repair the EAD is approximately \$162,000. Therefore the approximate EAD of at least \$243,000 in damages are considered as preventable with rehabilitation and taken as benefits.

The total estimated project costs to restore 20 year protection to the levee are \$1,163,000. These costs are annualized at the FY10 discount rate of 4 3/8 percent over the 20 year period of analysis. With a total annual cost of \$90,440 and a total annual benefit of \$243,000, the benefit to cost ratio is 2.7 to 1.

4.0 ENVIRONMENTAL EFFECTS OF THE PREFERRED ALTERNATIVE

Throughout this section, the environmental effects of the No Action Alternative, the Setback Alternative, and the Preferred Alternative (Repair in Place) for the project at the Nisqually Park Levee are presented and compared.

Environmental effects at any borrow site, quarry, or gravel mine used for fill material will not be considered. Any site would be fully permitted by the state and as such will have undergone an individual environmental evaluation (Norman 2000).

4.1 Physical Characteristics

No Action Alternative

Under the No Action Alternative, the physical characteristics of the upper Nisqually River in the vicinity of the levee would slowly change through time as the remaining cobbles and gravels are steadily eroded from the levee face and the toe and face rock continue to be lost to the river channel. It is likely that the levee would fail during a flood event in which the river stage rose to cover the damaged portions of the levee. This scenario could occur under as low as a 5 year flood event. Failure of the levee would not only cause substantial flooding and erosion damage to the structures and infrastructure protected by the levee, but would also broaden the active floodplain of the river in this area.

Setback Alternative

Similarly, the Setback Alternative would also broaden the active floodplain of the river. As seen in Figure 5, the floodplain is restricted by topography to a fairly narrow band on the right bank, limiting the setback potential. Depending on the alignment chosen, a setback would allow increased flood storage potential of varying amounts in the project vicinity. Hydraulic modeling would be needed to fully determine the amount of flood storage created and to determine the potential effects of any future channel migration due to the setback of the levee.

Preferred Alternative: Repair in Place

Under the Preferred Alternative, the face and toe of the levee would be reshaped and repaired to re-establish the 20 year flood event level of protection. No change from the preflood condition of the channel configuration or average monthly, annual, or flood flows of the river would be expected. The physical characteristics of the upper Nisqually River are not expected to change as the levee would be repaired using similar materials and within the same basic footprint as the existing levee. The river diversion would not be in place for more than 90 days and would not cause a permanent shift to the thalweg. The repair would prevent the levee from continuing to erode and would thereby prevent levee failure and migration of the river channel in a flood event.

Therefore, temporary impacts to the physical characteristics of the project area as a result of repair of the levee are expected to be insignificant and discountable and are not expected to significantly degrade the physical characteristics of the project area. No long term impacts to the physical characteristics of the project area are expected.

4.2 Water Quality

No Action Alternative

Under the No Action Alternative, there is increased potential for levee failure. Turbidity levels would be expected to increase substantially during a levee breach. Failure of the levee during a flood event would also degrade water quality by the mobilization of household goods, chemicals, and waste materials if floodwaters inundated the residential properties that were protected by the levee.

Setback Alternative

The Setback Alternative would have minimal impact on water quality. All construction could be completed out of the water, although work at the water's edge would be needed to remove the existing levee prism. The Setback Alternative would likely require a significant loss of riparian vegetation to create the new levee alignment and to remove the existing levee. This removal of trees could cause a loss of shading that could contribute to a local increase of river temperatures. Depending on how the river shifted after a levee setback and the alignment of the setback, a wide riverward bench could be allowed to revegetate and may not require continued maintenance.

Preferred Alternative: Repair in Place

There would be short-term water quality impacts from the diversion of the river and from construction of the repairs. The Corps would monitor water quality during construction within and at the outer edge of a 300-foot mixing zone downstream of the construction. If turbidity exceeds water quality standards (greater than 5 NTU over background if background is <50

NTU, or greater than 10% over background if background is >50 NTU), construction would be stopped or modified to allow turbidity to return to acceptable levels and avoid further exceedances.

There would be a loss of a few conifers on the riverward side of the levee. No trees would be removed on the landward side of the levee. No impact to water quality is expected due to the removal of this small number of trees.

Equipment likely to be used in this repair includes a small bulldozer and a track mounted excavator. During construction, best management practices for equipment operation and storage and use of hazardous materials would be employed. Therefore, no leakage or spills of hazardous materials are expected to occur.

Best Management Practices (BMPs) would be employed to minimize impacts to water quality. These will include, but are not limited to, stake the site to clearly define project limits to equipment operators, limit disturbance to vegetation, minimize the number of river crossings to build the diversion, minimize the length of the diversion channel, turbidity monitoring so that construction methods can be adjusted if needed, avoid storage of machinery in the channel, maintain the exterior of any vehicle to enter the channel as free of oil or fuel residues, ensure accessibility of spill kits, seeding of any bare soils at the end of construction, and dust control as needed.

Impacts to water quality due to the implementation of the Preferred Alternative are expected to be insignificant and discountable and are not expected to result in long-term degradation of water quality within the project area.

4.3 Vegetation

No Action Alternative

Under the No Action Alternative, there is increased potential for levee failure. Levee failure during a flood event could result in the complete loss of the trees and vegetation currently growing on the levee and potentially the loss of many of the trees in the areas protected by the levee. In the 2006 flood event, the Nisqually River reclaimed approximately 5 acres of land immediately upstream of the Nisqually Park levee. The flood breached NPS levees and destroyed the Sunshine Point Campground as well as part of the road and buried power cables.

Setback Alternative

The Setback Alternative would require a significant loss of riparian vegetation to create the new levee alignment and to remove the existing levee. The setback levee may need to be armored on the riverward side for at least a portion of the setback, though the rock could be covered with dirt and hydroseeded. The levee prism would need to be maintained with minimal vegetation to allow for inspections and access. Depending on the alignment of the setback and how the river shifted in relation to the setback, a wide riverward bench could be allowed to revegetate and may not require continued maintenance.

Preferred Alternative: Repair in Place

The Corps anticipates removing two small stands of young conifers from the top of the riverward side of the levee. No wetlands would be impacted by repair of the levee. The existing trees along the backside of the levee would not be disturbed during or as a result of the repair of the levee.

Any bare soil areas would be hydroseeded after construction to control erosion. As the project is located in a heavily forested area, the limited loss of trees for this repair is not expected to cause a significant impact.

Therefore, changes to the distribution, character, or abundance of riparian vegetation as a result of repairing the levee in place are expected to be insignificant and discountable and are not expected to result in long-term degradation of the existing vegetation communities within the project area.

4.4 Fish and Wildlife

No Action Alternative

Under the No Action Alternative, the existing habitats for fish and wildlife would be unchanged. The levee would remain in its damaged state and there is increased potential for levee failure. Levee failure during a flood event could degrade water quality by the mobilization of household goods, chemicals, and waste materials if floodwaters inundated the residential properties that were protected by the levee. Levee failure could also result in the complete loss of the trees and vegetation currently growing on the levee and potentially the loss of many of the trees in the areas protected by the levee.

However, expansion of the river's floodplain into areas now protected by the levee could ultimately result in increased habitat for riparian associated wildlife through the creation of additional early successional habitats, wetlands, and the formation of snags and downed wood. Temporary increases in turbidity and decreases in water quality during a flood and levee failure event could negatively impact fish populations in the vicinity of the levee, but these impacts would gradually decrease as the area stabilized following the flood.

Setback Alternative

The Setback Alternative would require a significant loss of riparian vegetation to create the new levee alignment and to remove the existing levee, causing a significant short-term impact on local habitat function. The levee prism would need to be maintained with minimal vegetation to allow for inspections and access. Construction noise and activity would disturb local wildlife.

Depending on the alignment of the setback and how the river shifted in relation to the setback location, a wide riverward bench could be allowed to revegetate and may not require continued maintenance. A wide vegetated bench would also allow for natural bank formation along the river so that the long-term benefits to a setback could be substantive.

Preferred Alternative: Repair in Place

There would be short-term impacts to resident fish and wildlife from repair of the levee. The primary impacts would be to water quality, with a temporary increase in turbidity expected during construction. To dewater the worksite, the river would be diverted into a side channel. During the Pierce County repairs in 2010, approximately 800 ft of river was diverted where fish salvage efforts moved approximately 70 cutthroat trout and over 90 sculpin. Fish salvage efforts would be conducted during the 2011 repairs to limit the impact to fish. Because all in-water work would be accomplished during the established fish window (July 15 – September 15), the potential disruption to fish and aquatic wildlife would be minimized.

Increased turbidity can cause physical and behavioral effects to fish. Physiological effects can include gill trauma, and effects on osmoregulation, blood chemistry, growth, and reproduction. Behavioral responses include feeding disruption from olfactory and visual impairment, gill flaring, and curtailment of territorial defense. Suspension of sediments can increase biochemical oxygen demand, and reduce dissolved oxygen levels in the water. Fish in glacially fed streams are naturally exposed to some elevation in suspended sediment. Glacial rivers typically have turbidity levels in excess of 30 NTU due to high concentrations of fine sediments and glacial flour, particularly during summer runoff (Milner and Petts 1994). Water quality monitoring will be done to ensure that turbidity levels can be kept within state water quality standards. Therefore, it is not expected that fish will suffer major impacts from the minor increases of turbidity resulting from the repairs.

Construction noise and the operation of the machinery may temporarily disturb any wildlife in the area, but local species are expected to return to their normal activities and habitats after construction is completed (within approximately 2-3 weeks) and during periods without construction activity (i.e. at night). 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. As the project site is located to one of the entrances to the Mount Rainier National Park, traffic in the area is often extensive during the summer peak season such that many wildlife species at the project site are relatively tolerant of humans and their activities.

In the context of the heavily forested area surrounding the project, only minimal tree loss would occur. This is not expected to significantly change the habitat function of the project area as related to the predamaged condition. Therefore, any impacts to fish and wildlife as a result of repairing the levee are expected to be insignificant and discountable and are not expected to result in long-term degradation of fish and wildlife populations within the project area.

4.5 Threatened and Endangered Species

No Action Alternative

Under the No Action Alternative, the existing habitats for threatened and endangered species adjacent to and along the levee would remain unchanged. Levee failure during a flood event could degrade water quality by the mobilization of household goods, chemicals, and waste materials if floodwaters inundated the residential properties that were protected by the levee. Levee failure would also likely result in the complete loss of the trees and vegetation growing on the levee and the loss of many of the trees in the area currently protected by the levee. Because the river upstream of the Alder Dam and the trees in the immediate vicinity of the levee do not provide habitat for listed species and because there will be no change to existing habitat from the No Action Alternative, no significant effect to any listed species would be expected.

Setback Alternative

The project is located within suitable spotted owl habitat; however, there are no known territories in the area based on surveys. The likelihood of the presence of marbled murrelets occurring in the Nisqually River drainage is considered low, it is assumed that they occupy the area due to the presence of suitable habitat adjacent to project area and the detection of low numbers of murrelets nearby using marine radar. The increased loss of forested habitat with this alternative could impact northern spotted owl and marbled murrelet habitat. The other direct and

short-term impacts are related to noise disturbance and activity created by heavy equipment. Restricting activity to the late nesting season reduces potential impacts to spotted owls and marbled murrelet.

Due to the low likelihood of the occurrence of Canada lynx or grizzly bear within the Park and adjacent to project activities, the limited amount of time the activity would take place, and because there would be no habitat removal, there would be no effect to the Canada lynx, or the grizzly bear. There are no known populations of bull trout or listed salmonids in the Nisqually River upstream of Alder Dam. Therefore, there would be no effect to bull trout, Chinook salmon, or steelhead, or their critical habitat.

Preferred Alternative: Repair in Place

The project is located within suitable spotted owl habitat; however, there are no known territories in the area based on surveys. The likelihood of the presence of marbled murrelets occurring in the Nisqually River drainage is considered low, it is assumed that they occupy the area due to the presence of suitable habitat adjacent to project area and the detection of low numbers of murrelets nearby using marine radar. On 27 May 2011, USFWS and the Corps surveyed the project area and a 35 yard noise buffer region around the project site for marbled murrelet habitat and none was found. This alternative would not remove any forested habitat. Direct and short-term impacts to spotted owls and marbled murrelet would be related to noise disturbance and activity created by heavy equipment.

Due to the low likelihood of the occurrence of Canada lynx or the grizzly bear within the Park and adjacent to project activities, the limited amount of time the activity the Canada lynx, or the grizzly bear. There are no known populations of bull trout or listed salmonids in the Nisqually River upstream of Alder Dam. Therefore, there would be no effect to bull trout, Chinook salmon, or steelhead, or their critical habitat.

Due to the limited duration of proposed activities, because no suitable habitat exists at the site or within a 35-yard buffer, and because there would be no habitat removal for construction, the proposed action *may affect, but is not likely to adversely affect* the marbled murrelet, and would have *no effect* on the northern spotted owl. The project would have *no effect* on the Canada lynx, grizzly bear, bull trout, Chinook salmon, or steelhead.

The Corps entered into an informal consultation with the USFWS via submittal of the BE on 20 April 2011 regarding the proposed emergency repair of the Nisqually Park levee. The BE addressed the known occurrences and the potential impacts of the proposed project on these species under the jurisdiction of USFWS. In 2010, Pierce County, in concert with the National Park Service, completed consultation on the initial repair of the eastern 600 ft of the damage (NPS 2010). No consultation with National Marine Fisheries Service (NMFS) is needed as there is no effect on salmonids or essential fish habitat. A letter from USFWS stating their concurrence with our determination and noting any further conservation measures needed to limit impacts to listed species would be needed. Email communication with USFWS indicates their concurrence with our findings and a letter is being drafted.

4.6 Cultural Resources and Native American Concerns

No Action Alternative

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

Setback Alternative

The Setback Alternative would require significant ground disturbance. Depending on the construction methods and alignment of the setback levee both known and unknown cultural resources could potentially be impacted.

Preferred Alternative: Repair in Place

The Corps 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.

In compliance with Section 106 of the NHPA, a Corps archaeologist conducted a cultural resources reconnaissance survey of the proposed project's Area of Potential Effect (APE). The cultural resources report included a search of the Washington Department of Archaeology and Historic Preservation (DAHP) Electronic Historic Sites Inventory Database, and other background and archival research. The Corps sent a letter to the Nisqually Tribes on 28 January 2011 soliciting any knowledge or concerns or religious significance for the APE. See Appendix A.

A cultural resources report was sent 12 April 2011 to the Washington Department of Archaeology and Historic Preservation (DAHP), detailing the "No Historic Properties Affected" determination and requesting concurrence. The cultural resources assessment of the project area did not yield any cultural materials during the course of a pedestrian reconnaissance survey. All staging and access points will be along the current levee. The proposed repairs will be conducted within the existing levee alignment. The vertical and horizontal construction depths will be within previous construction or disturbance limits. In addition, the project is located along the riverward side of the Nisqually River within a high velocity river channel and the likelihood of finding intact archaeological deposits or features is extremely low. The DAHP replied on 18 April 2011, concurring with our determination.

4.7 Land Use

No Action Alternative

Under the No Action Alternative, there would be no repair of the levee. The levee would continue to erode and would ultimately fail in a flood event. The erosion of the levee, its ultimate failure, and consequent flooding could potentially alter local land use, as currently protected areas behind the levee would no longer be suitable as residential properties. The entrance to the Mount Rainier National Park could also be significantly impacted. These areas would either have to be protected by a new levee or would revert back to undeveloped floodplain habitats.

Setback Alternative

Under the Setback Alternative, the levee would move landward. All lands between the current levee and the setback levee would lose their flood protection and would be at a much higher flood risk. Depending on the alignment this is likely to take some land that is currently part of residential properties. Existing land use patterns behind the new setback levee would be unchanged.

Preferred Alternative: Repair in Place

Under the Preferred Alternative, the levee face and toe would be repaired and would be returned to the predamage level of protection. This would protect the existing land use patterns behind the levee. Repair of the levee would restore the predamaged level of flood protection. Repair of the levee would not impact the land use in the immediate vicinity of the levee.

Any changes to local land use as a result of the Repair in Place alternative are expected to be insignificant and discountable and are not expected to result in long-term land use change.

4.8 Recreational Use

No Action Alternative

Under the No Action Alternative, there would be no repair of the levee. The levee would continue to erode and would ultimately fail in a flood event. The erosion of the levee, its ultimate failure, and consequent flooding could potentially alter local recreational use of the area, including damaging or destroying the entryway into the Mount Rainier National Park and the main roadway access for the Longmire and Paradise recreational areas.

Setback Alternative

Under the Setback Alternative, the setback levee would protect the existing recreational use of the surrounding area. Construction activities could cause short-term disruptions in access to the project area. The construction of the setback levee would take longer than the Repair in Place alternative due to the increased length. No long-term impacts would be anticipated.

Preferred Alternative: Repair in Place

Under the Preferred Alternative, the repaired levee would protect the existing recreational use of the surrounding area. Construction activities could cause short-term disruptions in access to the project area, but no long-term impacts would be anticipated.

Therefore, any changes to recreational use of the area as a result of the repair of the levee are expected to be insignificant and discountable and are not expected to result in long-term degradation or adverse effects on recreational opportunities within the project area.

4.9 Air Quality and Noise

No Action Alternative

Under the No Action Alternative, there would be no repair of the face or toe of the levee. No impact to air quality or noise would occur.

Setback Alternative

During construction, there would be temporary and localized reduction in air quality due to emissions from heavy machinery operating. These emissions would not exceed EPA's *de*

minimis threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) or affect the implementation of Washington's Clean Air Act implementation plan.

Ambient noise levels would increase while construction equipment was operating; intermittent increases in noise would occur during the arrival and unloading of the trucks delivering the Class V riprap to the site. However, these effects would be temporary and localized, and occur only during daylight working hours.

As this alternative would have a longer construction period due to the increased length of levee construction needed for a setback, the impacts to air and noise would be longer in duration. However no long term impacts would be expected once construction is complete.

Preferred Alternative: Repair in Place

During construction, there would be temporary and localized reduction in air quality due to emissions from heavy machinery operating to grade and armor the riverward face of the levee. These emissions would not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) or affect the implementation of Washington's Clean Air Act implementation plan.

Ambient noise levels would increase while construction equipment was operating; intermittent increases in noise would occur during the arrival and unloading of the trucks delivering the Class V riprap to the site. However, these effects would be temporary and localized, and occur only during daylight working hours. Noise disruption factors were considered for their effect on threatened and endangered species in the Biological Assessment (Appendix B).

Due to their temporary and localized nature, any changes to air quality or noise levels within the project area as a result of repair activities are expected to be insignificant and discountable. The Preferred Alternative is not expected to result in long-term degradation of air quality or noise levels within the project area.

Machinery and vehicles employed for the proposed repair work would release greenhouse gases. For every gallon of diesel fuel burned, 22 pounds of CO₂ are produced, and every gallon of gasoline produces 19.4 pounds of CO₂ (EPA 2011b). Based on the amount of equipment needed for construction, including but not limited to graders, front end loaders, and excavators, operating varying hours, an estimated 115 tons of CO₂ would be emitted using a 2008 construction emissions spreadsheet model for non road equipment from the Sacramento Metropolitan Air Quality Management District (SMAQMD). Carbon monoxide (CO); reactive organic gases (ROGs), which are ozone precursors; nitrogen oxides (NO_x); particulate matter (PM); and sulfur oxides (SO_x) are calculated for non road construction equipment. In addition, emissions were calculated for loaded dump trucks and water trucks, as well as personal vehicles. Table 2 outlines assumed emissions based on EPA (2011b) and SMAQMD (2008).

Table 2. Estimated emission (tons) of air pollutants and green house gases

	tons CO	tons ROG (ozone precursors)	tons CO ₂	tons NO _x	tons PM	tons SO _x
Non road emissions *	0.2	0.1	115	1.2	0.0	0.0
Truck emissions **			32			
Personal vehicle emissions ***			11			

* Construction equipment; based on spreadsheet model from SMAQMD (2008); assumes both 50 and 500 hp diesel engines working 10 hrs per day, modeling data.

** Assumes 5 mpg diesel, traveling 14,580 total miles; data not available for pollutants other than CO₂.

*** Assumes 20 mpg gasoline, traveling 22,500 total miles; data not available for pollutants other than CO₂.

4.10 Transportation and Infrastructure

No Action Alternative

Under the No Action Alternative, there would be no repair of the face or toe of the levee. The levee would continue to erode and would ultimately fail in a flood event. The erosion of the levee, its ultimate failure, and consequent flooding could alter local transportation and infrastructure including traffic into and out of Mount Rainier National Park on Highway 706. Failure to repair the levee could have a serious impact on local businesses and private citizens through increased flood damage to homes, agricultural operations, roads, and other commercial and residential infrastructure (including electricity, telephone, and septic systems), as well as the loss of tax revenues for local municipalities.

Setback Alternative

During construction, there would be temporary and localized increases in traffic on local roads and along Highway 706 to deliver materials to the site. Construction vehicles associated with the project would increase truck traffic merging, turning and traveling together with local traffic. As the construction period for the Setback Alternative would be longer than for the Repair in Place alternative, traffic impacts would be expected to last longer. Infrastructure would continue to be protected behind the levee once the repair is completed.

Preferred Alternative: Repair in Place

During construction, there would be temporary and localized increases in traffic on local roads and along Highway 706 to deliver materials to the site. Construction vehicles associated with the project would increase truck traffic merging, turning and traveling together with local traffic. Infrastructure would continue to be protected behind the levee once the repair is completed.

Due to their temporary and localized nature, any changes to transportation patterns within the project area as a result of the repair activities are expected to be insignificant and discountable. The Preferred Alternative is not expected to result in long-term degradation of transportation capabilities within the project area.

4.11 Aesthetics

No Action Alternative

Under the No Action Alternative, the levee would continue to erode and would ultimately fail in a flood event. The erosion of the levee, its ultimate failure, and consequent flooding could alter the local aesthetics of the area surrounding the levee. Failure to repair the levee could cause a negative

short-term impact local aesthetics through increased flood damage to homes, roads, and other commercial and residential infrastructure and the loss of existing vegetation from areas behind the levee. Over the long-term, the river corridor would likely assume a more natural condition with the aesthetic benefits.

Setback Alternative

Depending on the chosen alignment, the Setback Alternative could significantly change the aesthetics of the area. During construction, there would be temporary and localized decreases in the general aesthetics of the immediate vicinity of the levee as levels of truck traffic, noise, and truck emissions increase during the repair. The alignment would need to be cleared and grubbed and would remain free of significant vegetation for the long-term to allow for periodic inspection and access during flood events. The loss of a strip of forest within the park boundary would alter the viewshed and natural feel of the area for the foreseeable future.

Preferred Alternative: Repair in Place

During construction, there would be temporary and localized decreases in the general aesthetics of the immediate vicinity of the levee as levels of truck traffic, noise, and truck emissions increase during the repair. There would be a temporary disruption to local bird and wildlife watching as a result of the repair activities, but the disruption would cease once construction activities were concluded. A few small stands of conifers on the riverward side of the levee near the eastern end of the repair would need to be removed during the repair. The view of the levee from local roads and homes would not be significantly different from the pre-flood levee.

Due to their temporary and localized nature, any changes to aesthetic opportunities within the project area as a result of repair activities are expected to be insignificant and discountable. The Preferred Alternative is not expected to result in long-term degradation of aesthetic opportunities within the project area.

4.12 Economics

No Action Alternative

Under the No Action Alternative, the levee would continue to erode and would ultimately fail in a flood event. The erosion of the levee, its ultimate failure, and consequent flooding could significantly negatively impact the local economy through increased flood damage to homes, roads, and other commercial and residential infrastructure.

Setback Alternative

The Setback Alternative would continue to protect local residences and infrastructure to the same flood level of protection as the predamaged levee. The cost of the setback levee however would be significantly more than the Repair in Place Alternative. The cost of attaining real estate for the setback location would need to be covered by the local sponsor. The length of the repair would be increased to rebuild the levee behind the existing structure. While a setback may require smaller armor rock, it may require a significantly larger amount of material, depending on the chosen alignment.

This alternative would not meet the need for urgent repair. Also, the costs associated with the setback would exceed the benefits and would exceed the cost of repairing the damaged levee in place.

Preferred Alternative: Repair in Place

The Repair in Place Alternative would continue to protect local residences and infrastructure to the same flood level of protection as the predamaged levee. The benefit to cost ratio calculated for this alternative is 2.7 to 1. The economic benefit gained by the repair due to the continued protection of residential establishments and commercial establishments outweighs the cost of the construction effort.

4.13 Unavoidable Adverse Effects

Unavoidable adverse effects associated with this project include:

- (1) Increases in river turbidity, expected to occur only during the construction period and particularly during the river diversion efforts, would be less than Ecology’s established aquatic life turbidity criteria for core summer habitat (shall not exceed 5 NTU above background when the background is 50 NTU or less, or a 10% increase if the background is over 50 NTU),
- (2) temporary and localized increase in noise and vibration, may disrupt wildlife and fish resources in the area, as well as causing some disturbance to local residents,
- (3) temporary disruption of, and increase in local traffic during construction by construction vehicles to include workers travelling to and from the site and the transport of materials from the quarry by dump trucks,
- (4) temporary loss of wildlife habitat due to soil excavation and vegetation removal within the footprint of the repair, soil disturbance would be expected to last throughout the repair,
- (5) temporary impacts to fish during the river diversion efforts due to turbidity increases and fish salvage efforts.

4.14 Mitigation

The following steps would be taken as best management practices and offsetting measures to reduce and/or mitigate (minimize) the above adverse effects:

- (1) The Corps would halt any activities upon discovery of threatened or endangered species or archeological, paleontological, or historical findings.
- (2) Construction activities and staging would occur during the approved in-water work window to limit impacts to fish, which also limits impact to the early nesting periods of marbled murrelet and northern spotted owl.
- (3) Northern spotted owl surveys are ongoing, and the park may provide specific locations of owl territories. Exclusion zones would be based on the most recent information available and may change within a season as new information is gained. Currently there are no known spotted owl nest sites within or near the project area.
- (4) The following measures would be taken to limit noise and disturbance from vehicles and construction equipment, including trucks used to transport equipment to and from staging areas:
 - a. Equipment would not be allowed to idle longer than 15 minutes when not in use.
 - b. All motor vehicles and equipment would have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise, fumes, or smoke. Mufflers and sound attenuation devices (such as rubber strips or sheeting) would be installed and maintained on all equipment. This includes truck tail and other

gate dampeners (both opening and closing) for all dump trucks on the project. Use of unmuffled engine brakes or Jake Brakes is prohibited in the park unless required for safety.

c. Use of air horns within the Park would be limited to emergencies only.

- (5) Any wildlife collisions within the park would be reported to the National Park Service immediately.
- (6) In-water work would be restricted to the fish window identified by the Washington Department of Fish and Wildlife, which is July 15 to September 15.
- (7) Further actions recommended by USFWS pursuant to ongoing coordination under the Endangered Species Act would be undertaken.
- (8) Vegetable based hydraulic fluid would be used in heavy equipment assigned to work in the river channel. Spill control kits would be onsite during operations.

4.15 Cumulative Effects

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

The levee was originally built by local interests in the 1960s to protect State Route 706 and residential properties. The Corps rehabilitated portions of the levee in 1977 and again in 2004. In 1977, 1086 feet of levee was repaired, including replacement of the levee in two breach locations and replacement of class V armor rock at a scour location. In 2004 the Corps completed repairs on 800 feet at the western end of the levee. At that time the riverward face was resloped to 2H:1V and a 3 foot blanket of class V riprap armor was placed. A toe of class V riprap was also constructed with two feet of toe rock buried and five feet of launchable toe constructed. In September 2010, Pierce County completed the first 600 ft of the Federal project at the western end of the damage area. During the Pierce County repairs, approximately 800 ft of river was diverted where fish salvage efforts moved approximately 71 cutthroat trout and 95 sculpin.

The actions with the largest potential for cumulative impacts in this area are continuation of residential construction on properties protected by the levee, coupled with the consequent loss of native vegetation and wildlife habitats as development continues. There are no known plans to raise the levee to provide an increased level of flood protection or to extend the levee beyond its current footprint. The project maintains the existing level of flood protection. In the event of winter storms that damage other sections of the levee, the County would likely flood fight to prevent damage to adjacent properties.

While the original construction of the levee did remove a portion of the floodplain from the active influence of the river, repair of the levee does not change the existing condition of the floodplain, the river, or their biological functions. The harm to the biological function of the river and its floodplain is not increased by repair of the levee, but rather is maintained at its current level.

The cumulative effects of repairing the levee on federally listed species would also be minimized by avoiding disruptions of the local prey base and through appropriate timing of work windows

Maintenance of levee vegetation is expected to occur regularly by the sponsor, Pierce County Public Works throughout the existing levee system. In the 2010 levee inspection the levee was rated as minimally acceptable due to the presence of the trees larger than eight inches dbh on the back slope of the levee. This rating keeps the levee active in the Corps' PL84-99 program, but does set a time limit for removal of these trees by the local sponsor should they decide that they want to remain eligible for repair funding under the Corps' program. The Corps would flood fight the levee regardless of the status of the levee in the PL84-99 program, but would not assist in future repairs if the tree removal is not completed within two years of the "minimally acceptable" rating. If the County decides to complete this maintenance, the tree removal would be completed by the County and would undergo separate consultation. This tree removal could require a significant number of trees to be removed in the vicinity of the project area.

The proposed project would maintain but not add to losses in the active floodplain and the larger toe rock would limit the need for future repairs. When evaluated in the context of past, present, and reasonably foreseeable actions, the proposed projects would not result in significant cumulative effects.

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 (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 American Indian Religious Freedom Act 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

The Bald and Golden Eagle Protection Act (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. Bald and golden eagles are uncommonly or occasionally seen in the Park and construction would occur only during the end of the nesting period when young are fledging. No impacts are expected, however, if active nests are observed closer than a quarter mile during construction, consultation with the U.S. Fish and Wildlife Service would occur and, depending on their advice, a plan for the eagles would be developed to ensure that impacts to the nesting pair are minimized.

5.1.3 Clean Air Act

The Clean Air Act requires states to develop plans, called State Implementation Plans (SIP), for eliminating or reducing the severity and number of violations of National Ambient Air Quality Standards (NAAQS) while achieving expeditious attainment of the NAAQS. The act also required Federal actions to conform to the appropriate SIP. An action that conforms with a SIP is

defined as an action that will not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The Corps has determined that emissions associated with this project would not exceed EPA's *de minimis* threshold levels (100 tons/year for carbon monoxide and 50 tons/year for ozone) or affect the implementation of Washington's Clean Air Act implementation plan.

5.1.4 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.

The Corps 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 repair includes placement of larger toe rock than was previously at the location which would also change the footprint of the buried toe from the preflood condition (decreasing the width of the toe below the channel by ~3 feet and increasing the depth ~6 feet). The repair requires temporary dewatering of the work site through diverting the river into an existing side channel. In-channel materials, such as woody debris and boulders, would be used to create the temporary diversion. The Environmental Coordinator consulted a project manager in the Corps Regulatory Branch, who concurred that, if this project were to need a permit, the change from preflood condition constitutes no more than a minor deviation which would be fully consistent with application of NWP 3 to a typical permit applicant.

Furthermore, the Corps has analyzed the project pursuant to the general conditions established by the State associated with authorization under NWP 3. The state conditions of NWP 3 for Section 401 of the CWA and CZM consistency response require individual review due to the minor changes in the project footprint. The project was submitted to Ecology for review on 18 April 2011. On 5 May 2011 Ecology verified that the project does not require an individual water quality certification and that they determined that the project meets the requirements under NWP 3 (Appendix C). The USACE prepared a Section 404(b)(1) Evaluation (Appendix D).

Section 402 of the CWA is also triggered. The area of ground disturbance, including the diversion channel area, is approximately 2.1 acres. A Storm Water Pollution Prevention Plan has been written (see Appendix C) and an application for a National Pollutant Discharge Elimination System Permit has been submitted to the EPA. The Notice of Intent and permitting process will be completed prior to construction.

5.1.5 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.”

Pierce County is considered coastal under the CZMA. This project has been determined to be consistent with the Washington Shoreline Management Plan. The Pierce County Shoreline Master Program does not apply to the project location as the project lies within the National Park, which is outside of the boundary stated in the document. The determination of consistency is further confirmed through analogy to the provisions of the regional conditions under Nationwide Permit 3 pursuant to the Corps of Engineers’ Clean Water Act Section 404 permitting program. Although Corps’ Civil Works projects can’t be permitted by nationwide permits, discussion with Corps’ Regulatory Branch have verified that the project fits within the general requirements of Nationwide Permit (NWP) 3. The state conditions of NWP 3 for Section 401 of the CWA and CZM consistency response require individual review due to the minor changes in the project footprint. The project has been submitted to Ecology for review on 18 April 2011. Concurrence was received on 5 May 2011.

5.1.6 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 USFWS and NMFS, as appropriate, to ensure that proposed actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy designated critical habitats.

Determinations concerning effects on listed species in the project area have been made and transmitted to USFWS in a BE as discussed in section 3.5. Due to the limited duration of proposed activities and limiting work to the approved inwater work window which avoids early nesting periods, and because there would be no habitat removal, the proposed action *may affect, but is not likely to adversely affect* the marbled murrelet, and would have *no effect* on the northern spotted owl. The project would have *no effect* on Canada lynx, grizzly bear, bull trout, Chinook salmon, or steelhead. This determination has been submitted to USFWS on 20 April 2011(Appendix B). Emails with the USFWS indicate concurrence with our decision and a letter with their response is being drafted. No consultation with National Marine Fisheries Service (NMFS) is needed as there is no effect on Chinook, steelhead, and no critical habitat is designated at the project site.

5.1.7 Federal Water Project Recreation Act

In the planning of any Federal navigation, flood control, reclamation, or water resources project, the Federal Water Project Recreation Act, as amended (16 U.S.C. 460(l) (12) et seq.) requires that full consideration be given to opportunities that the project affords for outdoor recreation and fish and wildlife enhancement. The Act requires planning with respect to development of recreation potential. Projects must be constructed, maintained, and operated in such a manner if recreational opportunities are consistent with the purpose of the project.

This EA assesses impacts of alternative actions on recreation. No long term impacts to recreation are anticipated as a result of this proposed project. Short term impacts are related to construction and are not considered significant.

5.1.8 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). EFH is defined in as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 U.S.C. 1802(10)). The Nisqually River is designated as EFH for Chinook, coho, and pink salmon; however the Alder Dam restricts passage of anadromous fish. This dam is downstream of the project area and as such the project area does not contain EFH and no effect to EFH downstream would be expected.

5.1.9 National Environmental Policy Act (NEPA)

In accordance with the National Environmental Policy Act, federal projects are required to declare potential environmental impacts and solicit public comment. A Notice of Preparation was issued on March 24, 2011 to solicit public comment. No comments were received. The purpose of this Environmental Assessment document is to fulfill the Corps of Engineers documentation requirements under the National Environmental Policy Act.

5.1.10 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.

A cultural resources survey was conducted, and is referenced in this document. Coordination has taken place with affected tribes and with the Washington State Historic Preservation Officer (SHPO). The Corps, as outlined in Section 106, sought information about any knowledge of or concerns with the project APEs from the Nisqually Tribe of Indians and concurrence with the Area of Potential Effects (APE) from the SHPO. In a letter dated 1 February 2011, the SHPO concurred with the Corps’ APE. To date, no response by the Nisqually Tribe has been received. The Corps prepared a Section 106 compliance report and has submitted it to the SHPO, the Nisqually Tribe and Mount Rainer National Park archaeologist for comment and has requested that the SHPO concur with a determination of "No Historic Properties Affected" for the Nisqually Park Levee. SHPO concurrence was received 18 April 2011. See Appendix A.

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 are present in the project locations. Actions proposed by the Corps are consistent with Executive Order 11990.

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.

The project does not involve siting a facility that would discharge pollutants or contaminants, so no human health effects would occur. Therefore the project is in compliance with this act.

5.2.3 Executive Order 11988, Floodplain Management

Executive Order 11988 requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy of the floodplain, and to avoid direct and indirect support of floodplain development where there is a practicable alternative. In accomplishing this objective, “each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains.”

Section 8 of E.O. 11988 notes that the order does not apply to assistance provided for emergency work essential to save lives or protect public property, health, and safety. By repairing the levee damage and returning it to the predamaged level of protection, the project would be consistent with the act in reducing the risk of flood and minimize the impact of floods on human safety, health, and welfare, while not changing floodplain occupancy conditions.

6.0 COORDINATION AND COMMENTS

The following agencies and entities have been involved with the environmental coordination of this project:

- U.S. Fish and Wildlife Service (USFWS)
- Washington Department of Fish and Wildlife (WDFW)
- The Nisqually Tribe
- Washington State Office of Archaeology and Historic Preservation
- Pierce County
- National Park Service
- Washington Department of Ecology
- Seattle District Regulatory Distribution List-Pierce County
- Seattle District Regulatory Distribution List- Statewide.

During the planning and design of this project, the Corps coordinated with various State, Federal, Tribal, and local agencies to discuss design alternatives and potential impacts to the project vicinity. A Notice of Preparation was widely distributed for comment. The public comment period was open for 30 days from 24 March to 25 April. No comments were received.

7.0 CONCLUSION

Based on the evaluations contained in this EA, it has been determined that the PL 84-99 Nisqually Park Levee rehabilitation project does not singly or cumulatively represent a major Federal action significantly affecting the quality of the human or natural environment, and therefore does not require preparation of an environmental impact statement.

8.0 REFERENCES

- ABR, Inc. 2009. Radar Observations of Marbled Murrelets in Mt. Rainier National Park, Washington from 2001 to 2009. Unpublished report prepared for Mt. Rainier National Park, Ashford, WA, by ABR, Inc., Forest Grove, Or.
- Carpenter, C. S. 2002 *The Nisqually-My People: The Traditional and Transitional History of the Nisqually Indians People*. Tahoma Research Service. Tacoma, Washington.
- Carpenter, C. S. 1994. *Where the Waters Begin: Traditional Nisqually History of Mount Rainier*. Northwest Interpretative Association. Seattle, Washington.
- Cook-Tabor, C. 1999. Fishes of the Nisqually River, Estuary, and Reach. U.S. Fish and Wildlife Service, Western Washington Office, Aquatic Resources Division. Lacey, Washington. May 1999.
- Ecology (Washington Department of Ecology). 2009. Designated Uses for Waters of the State. Online at http://www.ecy.wa.gov/programs/wq/swqs/desig_uses.html Accessed 11 April 2011.
- Ecology (Washington Department of Ecology). 2011a. Water Quality Assessment map tool for Washington. Online at <http://apps.ecy.wa.gov/wqawa2008/viewer.htm>. Accessed 11 April 2011.
- Ecology (Washington Dept. of Ecology). 2011b. Air Quality. Online at <http://www.ecy.wa.gov/programs/air/airhome.html>. Accessed 15 April 2011.
- Hamer Environmental. 2000. Use of ornithological radar to survey for Marbled Murrelets in Mt. Rainier National Park. Unpubl. report prepared for Mt. Rainier National Park, Ashford, WA, Hamer Environmental, Mt. Vernon, Wash. 18 pp.
- Milner, A.M. and G.E. Petts. 1994. Glacial rivers: physical habitat and ecology. *Freshwater Biology* 32:295-307.
- Myers, E. and Herter. 2009. Rainier Northern Spotted Owl Demographic Study Area Report. In progress.
- Myers, E., and J. Schaberl. 2008. Mount Rainier National Park Northern Spotted Owl Demographic Monitoring- 2007 Progress Report. Unpublished Report. Mount Rainier National Park. Ashford, Washington.
- Nisqually Watershed Planning Group. 2002. Nisqually River Level 1 Watershed Assessment (WRIA 11), Summary Report. Watershed Professionals Network, Envirovision, GeoEngineers. July 2002.
- Norman, D.K. 2000. Mining regulations in Washington. Washington State Department of Natural Resources, Division of Geology and Earth Resources. Open File Report 200-3. Online at: http://www.dnr.wa.gov/Publications/ger_ofr2000-3_mining_regulations.pdf. Accessed 2 August 2010.

- NPS (National Park Service). 2008. United States Department of Interior. Environmental Assessment (EA) for the Carbon River Wonderland Trail Reroute. Mount Rainier National Park. Ashford, Washington.
- NPS (National Park Service). 2010. United States Department of Interior, Mount Rainier National Park. Biological Assessment, Pierce County Levee Repairs.
- NPS (National Park Service). 2011. Mount Rainier National Park Website. Online at: <http://www.nps.gov/mora/index.htm>. Accessed 4 April 2011.
- Puget Sound Clean Air Agency. 2006. Air Quality Data Summary. Online at www.pscleanair.org/. Accessed 12 Feb 2008.
- Sacramento Metropolitan Air Quality Management District (SMAQMD). 2008. CEQA tools. Online at <http://www.airquality.org/ceqa/index.shtml>. Accessed 7 March 2011.
- Samora, B.A., H. Moran, and R. Lofgren. 2009. An Inventory of Fish in Streams at Mount Rainier National Park. Natural Resource Technical Report (in progress). USDI National Park Service, Mount Rainier National Park.
- Smith, A. 2006. *Ethnography of Mount Rainier National Park: Tahoma*. Washington State University Press. Pullman, WA.
- Smith, M.W. 1940. *The Puyallup-Nisqually*. Columbia University Press. New York. New York.
- Stinson, D.W. 2001. Washington State recovery plan for the lynx. Washington Department of Fish and Wildlife, Olympia, Washington. 78 pp. + 5 maps.
- USACE (U.S. Army Corps of Engineers). 2004. Environmental Assessment for the Nisqually River Levee Repair, Rehabilitation of Flood Control Works, Pierce County, Washington. Seattle District, USACE. Available online at: <http://www.nws.usace.army.mil/ers/index.cfm>
- USEPA (U.S. Environmental Protection Agency). 2008. Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel. <http://www.epa.gov/OMS/climate/420f05001.htm>. Accessed 13 Feb 2008.
- USEPA (U.S. Environmental Protection Agency). 2007. Annual air quality monitoring summary statistics. http://www.epa.gov/aqspubl1/annual_summary.html.
- USEPA (U.S. Environmental Protection Agency). 2011a. The Green Book Nonattainment Areas for Criteria Pollutants. <http://www.epa.gov/airquality/greenbk/>
- USEPA (U.S. Environmental Protection Agency). 2011b. Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel. <http://www.epa.gov/oms/climate/420f05001.htm>
- USFWS (U.S. Fish and Wildlife Service). 2010. Concurrence Letter Subject: 2010 Pierce County Levee Repairs. Dated July 20 2010. USFWS Tracking Number 13410-2010-I-0408.
- USGS (U.S. Geological Survey). 2011. National Water Information System, USGS 12082500 Nisqually River Near National, WA. Online at http://waterdata.usgs.gov/wa/nwis/uv?site_no=12082500 Accessed 2 April 2011.

9.0 PREPARERS

Bobbi Jo McClain, Biologist, U.S. Army Corps of Engineers

Kara Kanaby, Archeologist, U.S. Army Corps of Engineers

Jeff Laufle, Biologist, U.S. Army Corps of Engineers

Hannah Hadley, Environmental Coordinator, U.S. Army Corps of Engineers

APPENDIX A: Tribal and SHPO Coordination



REPLY TO
ATTENTION OF

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

Environmental Resources Branch

JAN 28 2011

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

SUBJECT: U.S. Army Corps of Engineers Initiation of Consultation and Request for Comment regarding the Area of Potential Effects (APE) for proposed repairs to the Nisqually Park Levee Repair Project on the Nisqually River, Near Mount Rainier Pierce County, Washington.

Dear Dr. Brooks:

In cooperation with their local sponsor Pierce County, the U.S. Army Corps of Engineers, Seattle District (Corps) is planning to repair the Nisqually Park Levee, located along the Nisqually River, to pre-flood conditions. The project is located in Section 33 and 34, Township 15 North, Range 7 East in Pierce County and is located within the boundaries of Mount Rainier National Park (see enclosures). The total repair length is approximately 1,700 linear feet (LF). The repairs will include excavating the area of the previous toe to recover the buried toe rock. Excavation will continue to allow construction of a 10 foot high by 12 foot wide toe using the recovered rock with existing face rock. The levee face will be regraded to a 3H:1V slope to match pre-flood conditions and a two foot layer of 8 to 10 inch spalls overlain with a 4.5 foot blanket of 3- 4 man rock armor will be installed from the toe to the crown. Heavy loose riprap will be mixed with the toe and face rock to achieve satisfactory compaction and fit of materials. A 6-inch gravel lift will be installed along the top of the levee crown for inspection and maintenance access. In order to complete the repairs, a temporary diversion berm will be constructed to move the Nisqually River to an existing channel further from the bank. The berm will be removed at the project's conclusion. Repairs to the existing levee prisms are unlikely to encounter historic properties in the form of intact archaeological deposits, and vehicle access and project staging will pose little to no ground disturbance. Currently, access routes to the Nisqually Park Levee will avoid the entering and existing through the historic Nisqually entrance.

However, the Corps has determined that the scope of the proposed levee repair work, which may include levee expansion or complete removal of a levee prism to the original grade prior to replacement, will have the potential to affect historic properties eligible for listing in the National Register of Historic Places (NRHP) if they exist within the project's APE.

The Corps has defined the APE as the length of Nisqually Park Levee including areas along side of the levee that would need to be grubbed of their existing sod prior to construction, original surfaces under existing levees currently unavailable for examination, staging areas, access roads, and material sources.

When construction plans are developed, a Corps archaeologist will conduct a cultural resources survey within the APE to identify and record all historic properties in the APE, determine their NRHP eligibility, and determine project effects. A cultural resources report, compliant with federal and state Department of Archaeology and Historic Preservation Office (DAHP) standards will be prepared. The report will include the findings of the investigation, recommendations for archaeological monitoring during construction (if any), and a recommended determination of effects to historic properties. If archaeological monitoring is recommended, 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.

To further identify historic properties pursuant to, Section 106 of the NHPA of 1966, as amended (36 CFR 800.4 [a] [3]), the Corps is seeking information from tribes likely to have knowledge of, or concerns with, historic properties within the project's APE.

If you have any questions or information concerning the proposed levee rehabilitation APE, please contact Kara M. Kanaby, of my staff at (206) 764-6857, or by email at Kara.M.Kanaby@usace.army.mil.

Sincerely,



Evan Lewis, Acting Chief
Environmental Resources Branch

Enclosure

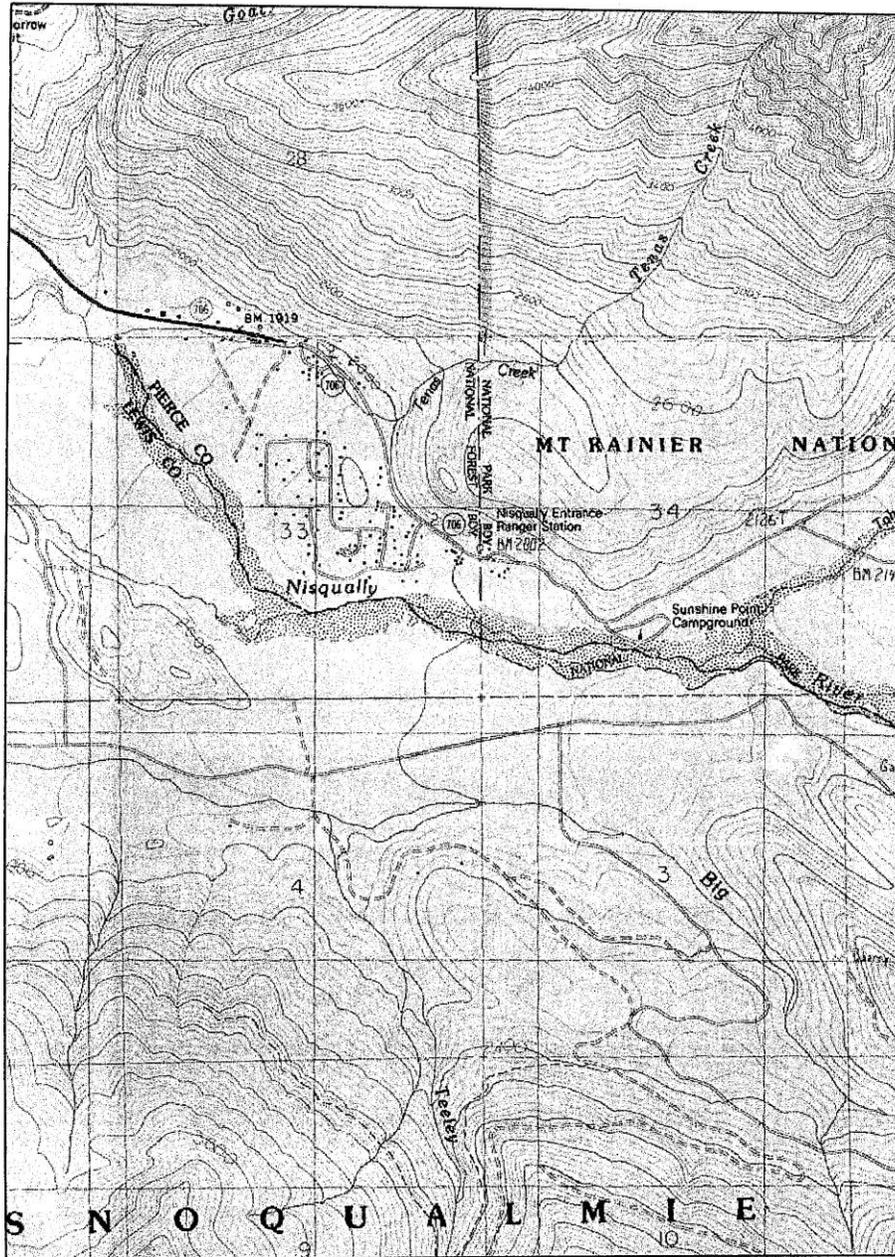
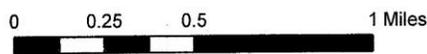
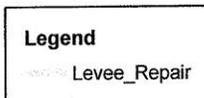


Figure 1: Nisqually Park Flood Control Area of Potential Effects





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

February 1, 2011

Mr. Evan Lewis
Regulatory Functions Section
Seattle District – Corps of Engineers
PO Box 3755
Seattle, Washington 98124-3755

Re: Nisqually Park Levee Repair Project
Log No.: 020111-39-COE-S

Dear Mr. Lewis;

Thank you for contacting our department. We have reviewed the materials you provided for the proposed Nisqually Park Levee Repair Project along the Nisqually River, Pierce County, Washington.

We concur with the proposed Area of Potential Effect (APE) as detailed your letter.

We look forward to further consultations on this proposed project and receiving the cultural resources survey when available.

We 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 behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. We look forward to further consultation.

Sincerely,

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





REPLY TO
ATTENTION OF

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

Environmental Resources Branch

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

APR 12 2011

SUBJECT: Determination of No Historic Properties Affected for the Nisqually Park Levee
Project Log No: 020111-39-COE-S

Dear Dr. Brooks:

The U.S. Army Corps of Engineers (Corps) along with the project sponsor, Pierce County will be conducting levee repairs to the Nisqually Park levee. The area of potential effect (APE) has been defined as the repair length of the Nisqually Park levee, which is approximately 1,700 LF as well as staging areas, access roads, and material sources. A Corps archaeologist conducted a pedestrian reconnaissance survey of the project area with negative results. All staging areas and access routes will utilize an existing road on the levee itself and all work will occur within the previous horizontal and vertical construction limits of the Nisqually Park levee. The Corps has determined that the proposed project will result in No Historic Properties Affected and will not require further archaeological investigation or monitoring.

Copies of the cultural resources report and Corps' correspondence to the tribes have been enclosed for your perusal.

We invite you to concur with our determination. If you have any questions or need additional information, please contact Kara Kanaby of my staff at (206) 746 6857 or by email at Kara.M.Kanaby@usace.army.mil

Sincerely,

Evan Lewis, Chief
Environmental Resources Branch



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

REPLY TO
ATTENTION OF

Environmental Resources Branch

APR 12 2011

The Honorable Cynthia Iyall,
Chairwoman, Nisqually Tribe
4820 She-Na-Naum Dr. SE
Olympia, WA 98513-9105

SUBJECT: Determination of No Historic Properties Affected for the Nisqually Park Levee

Dear Ms. Iyall:

The U.S. Army Corps of Engineers (Corps) along with the project sponsor, Pierce County will be conducting levee repairs to the Nisqually Park levee. The area of potential effect (APE) has been defined as the repair length of the Nisqually Park levee, which is approximately 1,700 LF as well as staging areas, access roads, and material sources. A Corps archaeologist conducted a pedestrian reconnaissance survey of the project area with negative results. All staging areas and access routes will utilize an existing road on the levee itself and all work will occur within the previous horizontal and vertical construction limits of the Nisqually Park levee. The Corps has determined that the proposed project will result in No Historic Properties Affected and will not require further archaeological investigation or monitoring.

A copy of the cultural resources report has been enclosed for your perusal.

If you have any questions or need additional information, please contact me at (206) 746-6857 or by email at Kara.M.Kanaby@usace.army.mil

Sincerely,

Kara Kanaby, Archaeologist
Environmental Resources Branch

Copies of this letter and its enclosures have been provided to:

Greg Burtchard
Archaeologist
Mount Rainier National Park
55210 238th Ave East
Ashford, WA 98304

Copies of this letter without enclosures have been provided to:

David Troutt
Director of Natural Resources
Nisqually Tribe
12501 Yelm Highway
Olympia, WA 98513

David Uberuaga
Superintendent of Mount Rainier National Park
Mount Rainier National Park
55210 238th Ave East
Ashford, WA 98304



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

April 18, 2011

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

Re: Nisqually Park Levee Repair Project
Log No: 020111-39-COE-S

Dear Mr. Lewis:

Thank you for contacting our department. We have reviewed the professional archaeological survey report you provided for the proposed Nisqually Park Levee Repair Project along the Nisqually River, Pierce County, Washington.

We concur with your Determination of No Historic Properties Affected.

We 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).

In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribes and this department notified.

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 and its implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment 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



APPENDIX B: Endangered Species Act Coordination

(placeholder, to be released upon completion of coordination)

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

The Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1855(b)), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a Federal fisheries management plan. The consultation requirements of §305(b) of the MSA provide that Federal agencies must notify NOAA Fisheries regarding an action that may adversely affect EFH (50 CFR 600.920(a)(3)) and provide NOAA Fisheries with an EFH Assessment (50 CFR 600.920(e)).

The objective of this EFH assessment is to determine whether or not the Proposed Action “may adversely affect” designated EFH for relevant commercially, federally-managed fisheries species within the proposed action area. Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH (50 CFR 600.810).

Mandatory contents of an EFH Assessment are: a description of the proposed action; an analysis of the potential adverse effects of that action on EFH and the managed species; the Federal action agency’s conclusions regarding the effects of the action on EFH; and proposed mitigation, if applicable (50 CFR 600.920 (e)).

Proposed Action

The Proposed Project would repair the damage to the levee toe and face and return the levee to its pre-flood level of protection. This alternative would consist of excavating 10 to 12 feet below the toe of the levee to create a new buried toe of ten to 15 ton rock. The riverward face of the levee would be regraded to a 3H: 1V slope. A two foot layer of 8 to 10 inch spalls would be placed on the riverward face as a filter layer. This would be overlain with a 4.5 ft thick blanket of two to four ton rock armor installed from the toe to the crown. Heavy loose riprap would be mixed with the toe and face rock to achieve satisfactory compaction and fit of the materials. A 6-inch gravel lift would be installed along the top of the levee crown to create a drivable surface for inspection and maintenance access. Placement of the toe rock would require diverting the water away from the work site into an ancillary channel to complete the repair in the dry. This is required for safety during construction, but would also minimize adverse effects on water quality and fisheries resources. The loss of riparian vegetation would be minimized and no wetland areas would be impacted. The Corps would use both existing and imported rock material. This project would also incorporate water quality monitoring and fish exclusion efforts to minimize effects on the aquatic and terrestrial resources in the area.

Identification of Essential Fish Habitat in the Project Action Area

EFH has been designated to protect waters and substrates necessary for fish spawning, breeding, feeding, or growth to maturity (MSA § 3(10)). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable artificial barriers, and longstanding, naturally-impassable barriers. The geographic

extent of freshwater EFH is specifically inclusive of all aquatic habitats within entire watersheds. For this action, the Nisqually River basin (USGS hydrologic unit number 17110015) is identified as EFH for Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), and pink salmon (*O. gorbuscha*).

The distribution of anadromous salmonids including Chinook salmon, coho salmon and pink salmon in the Nisqually River basin is limited to reaches and tributaries downstream of LaGrande Dam at MP 42.5. The LaGrande Hydroelectric Project was first constructed in 1910. There is considerable doubt that anadromous fish were able to migrate much further upstream of this project due to the presence of a now submerged natural barrier in LaGrande Canyon (cite report), which is located well below the project action area. Therefore, the Corps has determined that there would be **no effect** to EFH for Chinook salmon, coho salmon, or pink salmon.

APPENDIX C: Storm Water Pollution Prevention Plan

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
FOR
NISQUALLY PARK LEVEE REHABILITATION
NISQUALLY RIVER, PIERCE COUNTY, WASHINGTON**

Operator:
U.S. Army Corps of
Engineers Seattle District
P.O. Box 3755
Seattle, WA 98124-3755

Stormwater Manager and SWPPP Contact:
Bobbi Jo McClain
206 764-6968

SWPPP Preparation Date: 4 April 2011

TABLE OF CONTENTS

1.0 SITE EVALUATION, ASSESSMENT, AND PLANNING	52
1.1 Project/Site Information	52
1.2 Contact Information/Responsible Parties:	52
1.3 Nature and Sequence of Construction Activity.....	53
1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns	54
1.6 Construction Site Estimates	55
1.7 Receiving Waters	55
1.8 Site Features and Sensitive Areas to be Protected	57
1.9 Potential Sources of Pollution.....	57
1.10 Applicable Federal, Tribal, State, or Local Programs.....	60
2.0 PHASES OF CONSTRUCTION ACTIVITY AND APPLICABLE BMP'S.....	60
3.0 WATER QUALITY MONITORING.....	61
4.0 EROSION AND SEDIMENT CONTROL BMPS.....	62
4.1 Minimize Disturbed Area and Protect Natural Features and Soil.....	62
4.2 Stabilize Soils.....	62
4.3 Protect Slopes.....	63
4.4 Establish Stabilized Construction Access	63
5.0 ADDITIONAL BMP'S.....	63
5.1 Material Handling and Waste Management.....	63
5.2 Establish Proper Building Material Staging Area.....	64
5.3 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices	64
5.4 Spill Prevention and Control Plan.....	65
6.0 SELECTING POST-CONSTRUCTION BMPS	67
7.0 INSPECTIONS AND RECORDKEEPING	67
7.1 Inspections	67
7.2 Maintenance of Controls	69
7.3 Changes to the SWPPP	69
7.4 Termination of Coverage	69
7.5 Retention of Records.....	70
8.0 CERTIFICATION AND NOTIFICATION	70

TABLES

Table 1.8.1	Summary of Potential Pollutants from Construction Activities.....	11
Table 1.8.2	Summary of Potential Regulatory Pollutants	12

APPENDICES

Attachment A	General Location Map
Attachment B	Ecology Letter of Verification

ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CGP	Construction General Permit
MSDS	Material Safety Data Sheet
NPDES	National Pollutant Discharge Elimination System
NOT	Notice of Termination
NTU	Nephelometric Turbidity Units
OHW	Ordinary High Water
SMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers, Seattle District

1.0 SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 Project/Site Information

Project Name: Nisqually Park Levee Rehabilitation, Nisqually River, Pierce County, WA

Project Location: Along the right bank of the Nisqually River, between river mile 67.6 and 68.6 in the Mount Rainier National Park, Pierce County, WA

Latitude/Longitude: 46° 44' 18.60"N and 121° 54' 56.69"W

Method for determining latitude/longitude: center of project on Goggle Earth

Is the project located in Indian country: No

Name of reservation: Not Applicable

Is this project considered a federal facility: No but is being completed by the Federal Government in partnership with a local sponsor.

NPDES project or permit tracking number: TBD

A general project location Map is provided in Attachment A.

1.2 Contact Information/Responsible Parties:

Operator:

U.S. Army Corps of Engineers, Seattle District

P.O. Box 3755

Seattle, WA 98124-3755

Phone: 206-764-3495

Fax: 206-764-6602

Administrative Contracting Officer:

Anthony Doersam

U.S. Army, Corps of Engineers,

Seattle District 253-764-3484

Project Lead:

Paul Massart

U.S. Army, Corps of Engineers,

Seattle District 253-764-3514

Environmental Coordinator:

Bobbi Jo McClain

U.S. Army, Corps of Engineers,

Seattle District 206-764-6968

This SWPPP Was Prepared By:

Bobbi Jo McClain, Environmental Coordinator

PO Box 3755

Seattle, WA 98124

Phone: 206 764-6968 / Fax: 206 764-4476

E-mail: bobbi.j.mcclain@usace.army.mil

Prime Contractor:

USACE-Seattle
4735 E. Marginal Way S.
Seattle, Washington 98124

Emergency 24-Hour Contact Information:

Name	Company	Position	Cell
Bobbi Jo McClain	USACE-Seattle	Environmental Coordinator	206-764-6968

1.3 Nature and Sequence of Construction Activity

This non-Federal rural county levee was constructed in 1961 to provide flood control protection from the periodic recurring flooding of the Nisqually River near Mount Rainier National Park in Pierce County, Washington. The levee is located at the southwestern corner of the Mount Rainier National Park at approximately River Mile 67.6 to 68.6, near the town of Ashford within Pierce County Washington. The levee is located within Township 15 North, Range 7 East, in the southern half of Section 33, Western Meridian.

The levee is approximately 5,000 feet long and is 10-12 feet high on the landward side. The top width varies from 15 to 27 ft. The riverward slope was built at a 3H:1V slope. The levee is predominantly composed of local borrow material with Class V and 3-4 man rock erosion protection on the riverward slope and 6-8 man rock at the toe. The levee was designed to provide a 20-year level of protection. The area protected by the levee contains multiple single-family residences and summer cabins, associated local roads and Highway 706, the only road leading into the southwestern portion of Mount Rainier National Park.

Pierce County completed 600 ft of the repairs at the eastern end of the project area in September 2010. The proposed 2011 project would repair the remaining damage along 1,100 ft of the levee toe and face and return the levee to its pre-flood level of protection. This project would consist of excavating 10 to 12 feet below the toe of the levee to create a new toe of buried ten to 15 ton rock. The riverward face of the levee would be regraded to a 3H: 1V slope. A two foot layer of 8 to 10 inch spalls would be placed on the riverward face as a filter layer. This would be overlain with a 4.5 ft thick blanket of two to four ton rock armor installed from the toe to the crown. Heavy loose riprap will be mixed with the toe and face rock to achieve satisfactory compaction and fit of the materials. A 6-inch gravel lift will be installed along the top of the levee crown to create a drivable surface for inspection and maintenance access. Placement of the toe rock would require diverting the water away from the work site into an ancillary channel to complete the repair in the dry. This is required for safety during construction, but will also minimize adverse effects on water quality and fisheries resources. The loss of riparian vegetation would be minimized and no wetland areas would be impacted. The Corps would use both existing and imported rock material. This project would also incorporate water quality monitoring and fish exclusion efforts to minimize effects on the aquatic and terrestrial resources in the area.

The river in the project area is braided, with the thalweg changing location during storm events. However, the river often occupies the channel adjacent to the toe of the levee. If the river is at that location at the time that construction would begin, the flow would be diverted away from the work area into a side channel. Due to the very large size of rock to be placed for the structural toe to the levee, it is critical that the excavator(s) work from the channel bed to ensure that the toe rock is placed deep enough to construct a strong foundation. In order to excavate and construct this buried toe, the rock would be keyed into the channel bed below scour depth. Scour depth for this river segment has been estimated to be at least ten feet based on previous projects and observation of damage.

Assuming the project requires river diversion, the following steps will occur in approximately the following order:

1. Mobilize equipment and materials to the site;
2. Regrade the access road (top of the levee) and resurface with pit gravel as necessary for access;
3. Divert the river. No material will be removed from the river channel. Materials available within the channel will be utilized to create the diversion. This will include boulders, large woody debris, gravel, and branches. Fish exclusion protocols will be implemented as needed to the extent practicable and feasible;
4. Excavate channel bottom at the levee toe to create a keyway for the toe rock. The trench will be 10 to 12 feet deep, and 12 feet wide. Toe rock will be 10-15 ton rock;
5. Reset existing toe rock and supplement with new rock as needed;
6. Regrade face of the levee to remove sloughed material and prepare surface for rock placement. Slope will be 3H: 1V;
7. Place a 2 foot filter blanket of spall rock onto the levee face;
8. Place a blanket of riprap armor. Rock size will be 2-4 ton. Existing rock will be reused if possible and supplemented as needed;
9. Cover face of levee with 12 inches of river gravel from the waterward edge of the access road to the toe;
10. Stabilize the disturbed work area, including hydroseeding;
11. Remove the diversion berms; and
12. De-mobilize from the site.

Schedule

Site mobilization and construction is scheduled to begin on 9 August 2011 with an estimated completion date for the project of 15 September 2011.

1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns

Soil Types:

The levee is predominantly composed of local borrow material with Class V and 3-4 man rock erosion protection on the riverward slope and 6-8 man rock at the toe. The Nisqually River in the project reach is braided with the riverbed dominated by cobbles and containing large gravel bars.

Slopes:

The riverward slope of the levee was built at a 3H:1V slope. The landward slope of the levee was built at a 2H:1V slope. The slope along the lateral length of the levee is negligible. The levee is located on a dynamic reach of the river that changes its course often, resulting in a very braided system with large amounts of woody debris scattered on the gravel bars. The river reach is also relatively steep with a 1% gradient producing large velocities and shear stresses that move sediment easily.

Vegetation:

Vegetation on levees is highly managed to maintain accessibility for flood fighting and safety inspections. The riverward face of the levee includes 2 stands of approximately 40 conifers. The rest of the riverward face includes only sparse vegetation.

Drainage Patterns:

Two main drainage patterns exist within the work area. Drainage on the Nisqually River side of the current levee runs directly to the river. Drainage on the landward side is dissipated through natural percolation, evaporation, and absorption. The project area does not drain to a storm sewer.

Construction activities will not alter the current drainage pattern.

Site Maps and Drawings

Attachment A contains site maps showing the project area.

1.5 Construction Site Estimates

Following construction and final stabilization, rehabilitation of the Nisqually Park levee is not expected to change the overall area's runoff coefficient.

Nisqually Park Levee Rehabilitation Project

Construction Site Area to be Disturbed (Acres)	2.1
Total Project Area (Acres)	Up to 33, including the longest potential diversion channel
Percentage Impervious Area Before Construction	none
Percentage Impervious Area After Construction	none

1.6 Receiving Waters

The project drains to the Nisqually River. The Nisqually River is the closest receiving water supporting notable aquatic resources and multiple human uses. From the project site, the Nooksack River runs to the west and then northwest, emptying into southern Puget Sound.

The Nisqually River is designated for the following uses (WDE 2009):

Aquatic Life	Core summer habitat
Recreation	Primary contact
Water Supply	Domestic
	Industrial
	Agricultural
	Stock
Miscellaneous	Wildlife habitat
	Harvesting
	Commerce/Navigation
	Boating
	Aesthetics

In the Nisqually Basin, the Washington Department of Ecology (Ecology 2007) has listed the following impairments under Sec. 303(d) of the Clean Water Act: total maximum daily loads (TMDLs) have been set for fecal coliform and dissolved oxygen. The particular reaches of concern are all low in the watershed. There are no 303(d) listings for the project area though a few tributaries nearby have noted temperature concerns.

The Nisqually River has an aquatic life-use designation of “Core summer habitat” per WAC 173-201A-200. The standards for this designation per WAC 173-201A200 are:

Temperature. Temperature shall not exceed a 7-day average of the daily maximum temperatures (7-DADMax) of 16°C (60.8°F) due to human activities. When natural conditions exceed 16°C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C (0.54°F).

Fecal Coliform. Fecal coliform organism levels shall both not exceed a geometric mean value of 50 colonies/100 mL and not have more than 10% of all samples exceed 100 colonies/100mL

Dissolved Oxygen. The 1-day minimum dissolved oxygen is 9.5 mg/L.

Dissolved Gas. Total dissolved gas shall not exceed 110% of saturation.

pH. pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.2 units.

Turbidity. Turbidity shall not exceed 5 nephelometric turbidity units (NTU) over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.

Toxics. Toxic, radioactive, or deleterious materials concentrations shall be below those which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health.

Aesthetics. Aesthetic values shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.

The primary pollutant of concern for water quality compliance is turbidity from the diversion and construction activities. Fuels and lubricants from the equipment are the secondary pollutants of concern. The water quality monitoring plan is designed to monitor construction activities and provide feedback to the environmental coordinator and construction representatives as they pertain to water quality impacts.

1.7 Site Features and Sensitive Areas to be Protected

Clearing limits will be clearly marked with surveying tape to prevent unnecessary damage during clearing operations. The protection of backslope trees will be discussed prior to the start of work activities during Preparatory Phase Inspections.

The Nisqually River itself is another site feature to be protected. Although the river bank levee is present for a portion of the project construction element, great care must be taken throughout the project to protect the river waters. Those protections are the subject of this plan.

1.8 Potential Sources of Pollution

Three distinct types of construction will occur on the project site: 1) upland equipment access, staging, and; 2) grading or excavation; and 3) river diversion efforts. Table 1.8.1 is a summary of the potential pollutants associated with the major construction activities on the project. The table characterizes the construction activity, the types of pollutants, and the potential for contamination of the watershed. The contamination potential is a characterization that qualitatively assesses the amount of work in any certain area, the types of equipment being used, the types of pollutants and potential for contamination if a spill or accident happens. The three categories of contamination potential are (-) no pollution contamination potential, (○) minimal contamination potential, and (●) moderate pollution contamination potential. Table 1.8.2 is a summary of the work activities and pollutant regulatory categories. The table shows that the primary pollutant categories of concern are turbidity and toxics. The monitoring plan to be discussed later in Section 3.0 is oriented around these general areas of concern.

Table 1.8.1. Summary of potential pollutants from construction activities

Area	Activity	Type of Pollutant		
		Sediment, runoff and turbidity	Fuels and lubricants	Hydraulic Fluids
Access and Staging	Temporary Staging	○	●	●
	Temporary access	●	●	●
River Diversion		●	●	●
Grading and Excavation	Grading	●	○	○
	Excavation	●	●	●

-no pollution contamination potential
 ○ minimal pollution contamination potential
 ● moderate pollution contamination potential.
 x high pollution contamination potential.

Table 1.8.2. Summary of potential regulatory pollutants

Area	Activity	Type of Pollutant						
		Fecal Coliform	Dissolved Oxygen	Dissolved Gas	Temperature	Turbidity	Toxics	Aesthetics
Upland	Temporary Staging	-	-	-	-	○	○	-
	Excavation	-	-	-	-	○	-	-
	Finish grading	-	-	-	-	○	○	-
In-water	Construction access	-	-	-	-	○	○	-
	River Diversion	-	-	-	-	●	-	-
	Excavation and rock placment	-	-	-	-	○	○	-

-no pollution contamination potential
 ○ minimal pollution contamination potential
 ● moderate pollution contamination potential

1.8.1 Upland Potential Pollutants

Activities that will take place in the uplands include staging of equipment and materials; clearing, grubbing, grading, placement of gravel and rock for access roadways; placement of import materials; finish grading; and hydroseeding.

Temporary Staging: The staging area will be located on the top of the levee. Equipment will be excavators, bulldozers, dump trucks, construction materials, and miscellaneous debris. Materials will include fill, armor rock and fuels and lubricants for the equipment. Potential contaminants that could run off staging areas during a storm would be soil (suspended solids, turbidity), fuels, and lubricants, construction materials, and sanitary waste. The pathways for pollutants are seepage into soils, groundwater and along natural drainage paths.

Excavation: Clearing and grubbing to the design cut limits will be required. Excavation will occur in areas isolated from flowing water. Potential contaminants that could runoff of excavated areas during a storm would be soil with rainfall runoff. The pathways for pollutants are seepage through groundwater and drainage to the river.

Finish Grading: Following construction of site features, all disturbed areas and roadways will be final graded and finished per the design drawings. Potential pollutants include soils, fuels and hydraulic fluids if they are spilled on the access road and followed by a rainfall runoff event. The pathways are seepage into the groundwater and along natural drainage paths.

1.8.2 Inwater Potential Pollutants

Activities that will take place below the ordinary high water (OHW) mark of the river will include river diversion efforts, excavation for buried toe placement and placement of rip rap.

Construction Access: Construction equipment will be used to divert the river including potentially digging a temporary channel for the diverted waters and building a temporary berm to divert the river from the construction area. Construction equipment will work from the river bottom to excavate for the buried toe and for placement of the toe rock. Potential contaminants that could run off equipment would be soil (suspended solids, turbidity), fuels, and lubricants.

River Diversion: Diversion of the river will be required to safely and properly complete construction of the buried toe while minimizing impacts to water quality and local fish populations. Potential contaminants that could runoff of the river diversion during a storm would be soil (suspended solids, turbidity).

Excavation and Rock Placement: Equipment will operate below ordinary high water to excavate existing fill and place armor rock. This work will be completed after the river is diverted so minimal flowing water is expected to be present. Potential contaminants include discharges to receiving waters from substrate disturbance, and fuels, lubricants and hydraulic fluid from the equipment. Work under the OHW mark will require isolation and monitoring to ensure no pollutants enter the water in accordance with the Best Management Practices (BMPs) described in Sections 4.0 and 5.0.

1.9 Applicable Federal, Tribal, State, or Local Programs

Although this SWPPP and actions onsite fall directly under the NPDES Construction General Permit (CGP), site work shall also be done in accordance with the Pierce County Surface Water Design Manual.

2.0 PHASES OF CONSTRUCTION ACTIVITY AND APPLICABLE BMP'S

The phasing of construction work is a key element of stormwater controls on the project. Crews will work each of the construction phases sequentially in order to 1) minimize the exposure of soils and 2) decrease the time until final stabilization is reached on any given section of the project. Additional detail regarding the work to be done in each phase was presented earlier in Section 1.3.

Phase I: Site Preparation: This phase will be the start of work activities. The project area will be staked and flagged to define the work area and minimize disturbance area.

- Associated BMPs: Preserve natural vegetation
Stake and flag site
Stabilize construction entrance

Phase II: River Diversion: This work will allow for the dewatering of the work site to minimize in-water work.

- Associated BMPs: Minimize length of temporary diversion channel
Use local materials to create temporary diversion berm
Stabilized construction entrance to river channel
Water Quality Monitoring

Phase III: Toe Placement: This work involves excavating as shown in the plans.

- Associated BMPs: Stabilized construction entrance
Construction/parking area stabilization
Emergency spill response kits available
Water Quality Monitoring

Phase III Levee Prism Repair: The damaged portion of the existing levee above the toe will be regarded to a 3:1 slope. Sloughed material will be removed, a blanket of filter rock will be laid and the armor rock will be placed.

- Associated BMPs: Dust control
Stake and flagging to maintain site boundaries
Emergency spill response kits available
Water control BMP's
Water Quality Monitoring

Phase IV (Finish Work): Upon completion of all construction activities, any bare soil areas

disturbed by levee construction, staging activities or road access will be reseeded with native grasses and forbs.

- Associated BMPs: Post Construction BMP's
Emergency spill response kits available
Temporary diversion berms removed
Water Quality Monitoring
Mulching

3.0 WATER QUALITY MONITORING

A construction water quality monitoring program will be performed in conjunction with any and all in-water work to ensure compliance with water quality standards on the project. This water quality monitoring plan shall work in conjunction with this SWPPP to minimize overall sediment discharge from the project.

Visual water quality monitoring will be conducted throughout the entire construction effort. Water quality monitoring will be conducted during the river diversion efforts and during other sediment-generating activities, as needed. A water quality monitoring location will be arranged to capture background turbidity information at a location upstream from the project site, outside the area of influence of the in-water work. Point of compliance monitoring points will be located at the end of a mixing zone of 300 feet from the downstream edge of in-water activities following Ecology's normal mixing zones. Background measurements will be taken at least once a day or more as needed.

At the initiation of the river diversion two water quality samples will be taken, 30 minutes apart. Subsequent sampling is dependent on monitoring results and ongoing construction activities, but shall be a minimum of the following: Samples will be taken every 3 hours at a minimum until measurements show no exceedances for three consecutive days. Turbidity measurement will be taken in the channel at 0.5 feet below the surface of the water at the sampling location. Turbidity shall not exceed 10% above the background turbidity levels if background turbidity is above 50 NTU or 5 nephelometric turbidity units (NTU) over background turbidity if background turbidity is below 50 NTU. All monitoring data will be recorded on a field data collection form to record measurements and reported to the Corps' environmental coordinator. These WQ monitoring data reports will be submitted daily by email to bobbi.j.mcclain@usace.army.mil. Monitors will note daily calibration, periodic turbidity readings, compare them to background readings, identify the current construction activities occurring at the site.

If turbidity monitoring reveals an exceedance at the designated downstream monitoring locations, the Corps will be notified immediately by phone, along with notification to the on-site Construction Manager and the Environmental Coordinator, work will be stopped, and corrective actions will be taken. A written report will be drafted summarizing exceedance and corrective action. Hourly monitoring will continue while construction activities are restarted. Once turbidity falls to acceptable levels then the general monitoring schedule will be implemented.

Water Quality Monitoring BMP	
BMP	Water Quality Monitoring
SMMWW Reference	N/A
Installation Schedule	Monitoring to be performed in conjunction with in-water work activities.

4.0 EROSION AND SEDIMENT CONTROL BMPS

4.1 Minimize Disturbed Area and Protect Natural Features and Soil

Overall, the project will involve disturbance over much of the construction site. Prior to the start of construction, trees outside the clearing limits will be clearly marked. All clearing limits will be marked in the field to prevent damage and offsite impacts. The river diversion channel location will be finalized. The length of the channel will be minimized to the extent practicable based on existing off site channel locations so that excavation efforts and fish salvage efforts can be minimized. A walkthrough of the entire construction area will be performed at the start of the project to minimize the disturbed area.

The following BMPs will be implemented in this regard:

Minimize Disturbed Area and Protect Natural Features and Soil BMPs	
BMP	Preserving Natural Vegetation
SMMWW Reference	BMP C101
Installation Schedule	Immediately prior to the start of work activities (7/28-10/24)
Maintenance & Inspection	Inspect flagging daily.
Responsible Party	US Army Corps of Engineers

4.2 Stabilize Soils

All exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrops, flowing water, and wind. To minimize the duration of area exposed, project elements will be completed as quickly as possible without compromising the quality of work. Hydroseeding will be provided to protect disturbed areas so that any cleared or graded area will not remain un-worked for more than seven days from April 1- October 31, and for more than two days from November 1- March 31 without being seeded. The work area will be mostly covered in riprap or quarry spalls. Any bare soil areas will be seeded at the end of construction. If seeding does not occur before 1 October, then mulch cover will be maintained over the seed until 75% grass cover has been established. Preventative measures to minimize wind transport of soil (e.g., water spraying) shall be taken. The amount of water sprayed for dust control shall be the minimum necessary to prevent airborne dust and sediment. The amount of water used should not create runoff.

Stabilize Soil BMPs	
BMP	Temporary and Permanent Seeding (Permanent)
SMMWW Reference	BMP C120
Installation Schedule	Within 7 days of the completion of soil being worked (April 1 – October 31) or 2 days (November 1 – March 31). Seeding shall immediately follow phased work activities.
BMP	Mulching (Temporary)
SMMWW Reference	BMP C121
Installation Schedule	Mulching is generally not anticipated but may be required under certain conditions.
BMP	Dust Control (Temporary)
SMMWW Reference	BMP C140
Installation Schedule	Required on an as-needed basis to support work activities and depending on the environmental conditions.

4.3 Protect Slopes

The sequencing of levee rehabilitation activities and diversion of the river will minimize the amount of time that the slope is exposed to flows. This exposure duration will be the working time of the slope. Following the working time, the slope will be stabilized per the project design with spalls and armor rock. If site conditions or sequencing changes, this condition will need to be evaluated and appropriate BMPs implemented.

4.4 Establish Stabilized Construction Access

Access to the site will be via existing paved or gravel roads. A stabilized construction access roads shall be ensured. The top of the levee shall be maintained to avoid vehicle disruption of the topwidth and resultant loss of soil. Access routes are shown in the drawings provided in Attachment A.

Establish Stabilized Construction Access BMPs	
BMP	Stabilized Construction Entrance
SMMWW Reference	BMP C105
Installation Schedule	At the start of work activities
BMP	Construction Road/Parking Area Stabilization
SMMWW Reference	BMP C105
Installation Schedule	In conjunction with the start of work and excavation activities.

5.0 ADDITIONAL BMP'S

5.1 Material Handling and Waste Management

General Waste Disposal

There is very little anticipated waste on the project. There will be no discharge of solid or liquid waste materials within the project limits. A general trash receptacle will be located at the project site office. Any generated trash will be promptly placed in the container. The container will be emptied on a regular basis.

Sanitary Waste

Sanitary waste will be limited to portable chemical toilets. Portable toilets will be placed on the residential side of the project area, well away from the Nisqually River.

Hazardous Materials

Hazardous materials will be kept to an absolute minimum on the project site. Service trucks will be brought to the site on an as-needed basis and will not remain overnight. Any miscellaneous hazardous materials will be stored in the designated storage area.

Dust Controls

Watering of areas will be performed as necessary to prevent the occurrence of fugitive dust during construction activities, material handling, and vehicle movement. Water will be kept to an absolute minimum to prevent runoff.

5.2 Establish Proper Building Material Staging Area

Staging will occur on the top of the levee. Materials will be delivered and placed and are not expected to require storage.

5.3 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

Vehicle/Equipment Fueling Operations

Three fueling conditions will exist on the project site as detailed below:

- 1) To the maximum extent possible, haul vehicles will be fueled offsite.
- 2) Onsite equipment working above the OHW mark will not be fueled within 50 feet of the water's edge. Fueling will occur on a level area sloping away from the river.
- 3) All fueling will be done with auto-shutoff nozzles. A portable polyethylene containment device with absorbents will be placed immediately under the fueling point to catch any spilled liquids and serve as a barrier to the fuel's release.

Equipment and Vehicle Fueling BMPs	
BMP	Offsite fueling for haul vehicles
SMMWW Reference	N/A
Installation Schedule	Implement across the entire duration of the project.
BMP	Fuel equipment above OHW a minimum of 50LF from the river's edge in an area sloping away from the river.
SMMWW Reference	N/A
Installation Schedule	Implement across the entire duration of the project.
BMP	Fuel equipment on the access road using checklist procedure.
SMMWW Reference	N/A
Installation Schedule	Implement across the entire duration of the project.
BMP	Use of catch basins, absorbents, and spill kits for all fueling
SMMWW Reference	N/A
Installation Schedule	Implement across the entire duration of the project.

5.4 Spill Prevention and Control Plan

The following spill prevention BMP's will be practiced to eliminate spills before they happen.

Establish Spill Prevention and Control BMPs	
BMP	Preventive Maintenance
SMMWW Reference	N/A
Installation Schedule	Implement across the entire duration of the project.
BMP	Available Emergency Spill Containment and Cleanup kits
SMMWW Reference	N/A
Installation Schedule	Implement across the entire duration of the project.

5.4.1 Equipment Staging and Maintenance

- Equipment shall be staged in the designated areas.
- Onsite maintenance of equipment will be minimized to the maximum extent possible.
- Secondary containments shall be utilized whenever there is a potential for spillage.
- Use proper equipment (pumps, hoses, dispensers, and funnels) to transfer fluids equipped with auto-shutoff nozzles.
- Spill kits shall be readily accessible.
- Equipment inspections shall be done on all site equipment. Incoming vehicles shall be checked for leaking oil and fluids
- Inspect equipment routinely for leaks and spills
- Repair equipment immediately, if necessary
- Implement a preventative maintenance schedule for equipment and vehicles

5.4.2 Fueling Area

- Perform onsite fueling only with proper containment and controls in place.
- Use secondary containment during all fueling operations to catch spills
- Use proper equipment (pumps, hoses, dispensers, and funnels) to transfer fluids with auto-shutoff nozzles.
- Spill kits shall be readily accessible.
- Inspect fueling and laydown area routinely for leaks and spills.

5.4.3 Hazardous Material Staging Area

- Reduce the amount of hazardous materials by substituting non-hazardous or less hazardous materials.
- Hazardous materials will be kept to an absolute minimum onsite.
- A Material Safety Data Sheets (MSDS) shall be required for any Hazardous Material brought on site. The MSDSs shall be maintained on site.
- Hazardous materials stored onsite will be kept in the Hazmat locker at the site trailer well away from waterside activities.
- Hazardous materials shall be stored in covered containers with proper labeling.
- Keep spill kits readily accessible near the hazardous material storage areas

5.4.4 Spill Containment

The following discussion identifies the types of secondary containment that will be used in the

event of a spill.

- **Equipment Staging and Maintenance Area.** Any equipment leak from a fuel tank, equipment seal, or hydraulic line will be contained within a spill containment cell placed beneath all stationary potential leak sources. An undetected leak from parked equipment will be cleaned up using hand shovels and containerized in a 55-gallon steel drum for off site disposal.
- **Fueling Area.** Fueling will be performed with a secondary containment placed immediately below the fueling area. A small spill during fueling operations will be contained using fuel absorbent pads at the nozzle. A spill response kit will be staged for each fueling operation.
- **Oil Containment Boom.** As previously discussed, an oil containment boom will surround all in-water work activities. Additional oil containment boom will be staged immediately adjacent to the work area and deployed in the event of a release.

5.4.5 Spill Countermeasures

Every preventative measure shall be taken to keep contaminated or hazardous materials contained. If a release occurs, the following actions shall be taken:

1. **Stop the Spill:** Take action to immediately stop the source of the spill.
2. **Warn Others:** Notify co-workers and supervisory personnel of the release. Notify emergency responders if appropriate. For site personnel an alarm system will consist of three one second blasts on an air horn or an equipment horn sounded by the person discovering a spill or fire. In the event of any spill the Construction Manager as well as the Corps' environmental coordinator shall be notified immediately.
3. **Isolate the Area:** Prevent public access to the area and continue to minimize the spread of the material. Minimize personal exposure throughout emergency response actions.
4. **Containment:** Isolate spills using spill kits, containments, and/or oil containment boom. For larger spills wait for the arrival of emergency response personnel and provide directions to the location of the emergency
5. **Reporting:** The designated Corps representative shall be notified in the event of a spill. The Construction Manager will notify Ecology of any oil or other toxic material spills immediately to Ecology's 24-hour Spill Response Team at 1-800-258-5990, and within 24 hours to Ecology's 401/CZM Federal Project Manager at the following phone numbers:

Phone: (360) 407-6300
Phone: (425) 649-6926
Fax: (360) 407-6305

5.5 Allowable Non-Stormwater Discharges

Allowable Discharges

The following non-storm water discharges are anticipated to occur on the site:

- Water used to control dust.

As previously discussed, the amount of water sprayed for dust control shall be the minimum necessary to prevent airborne dust and sediment and shall not create runoff.

Non-Stormwater Discharge Management BMPs	
BMP	Dust Control (Temporary)
SMMWW Reference	BMP C140
Installation Schedule	Required on an as-needed basis to support work activities and depending on the environmental conditions (7/1-10/24)

6.0 SELECTING POST-CONSTRUCTION BMPs

The project design entails 2 primary post-construction BMPs that serve to control pollutants and stormwater discharges. These post-construction BMPs include:

1. Levee slope stabilization—The overall project design works to create a levee slope which resists scour and sediment transport into the Nisqually River. This is done through the placement of rip rap in accordance with the project design.
2. Hydroseeding—Project seeding is performed as a post-construction BMP. Seeding conducted on the bare soil areas serves to minimize stormwater discharges once established.

Post-Construction BMPs	
BMP	Levee Slope Stabilization
Reference	Project Design Civil Sheets and Cross Sections
Installation Schedule	Implement in a phased manner across the entire duration of the project.
BMP	Temporary and Permanent Seeding (Permanent)
SMMWW Reference	BMP C120
Installation Schedule	Within 7 days of the completion of soil being worked (April 1 – October 31) or 2 days (November 1 – March 31). Seeding shall immediately follow phased work activities. Mulch will cover the seeds if placed after October 1 until 75% grass cover is attained.

7.0 INSPECTIONS AND RECORDKEEPING

7.1 Inspections

Personnel:

Formal SWPPP inspections will be conducted primarily by the Seattle District, Corps Environmental Coordinator as well as the on-site Construction Manager. Both individuals shall

have experience in civil projects and be knowledgeable in the principles and practice of erosion and sediment controls and possess the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity.

Inspection Schedule and Procedures:

Inspections shall occur (1) at least once every 7 days or (2) at least once every 14 days and within 24 hours of the end of a storm generating precipitation of one-half inch or greater. It is anticipated that the project will have weekly formal SWPPP inspections.

Each inspection will include, but will not be limited to, all areas of the site disturbed by construction activity. Inspectors shall look for evidence of, or the potential for, pollutants entering the storm water conveyance system. Sedimentation and erosion control measures identified in the SWPPP shall be observed to ensure proper operation. Discharge locations shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to waters of the United States. Where discharge locations are inaccessible, nearby downstream locations shall be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking. Areas that have been finally stabilized will also be inspected monthly until removed from the CGP coverage or the Notice of Termination (NOT) has been issued.

For each inspection, an inspection report shall be completed which includes the following:

- Inspection Date
- Names, Titles, Qualifications of Personnel Making the Inspection
- Weather information for the period since the last inspection, including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event, and whether any discharges occurred
- Weather information and a description of any discharges occurring at the time of the inspection.
- Location(s) of discharges of sediment or other pollutants from the site;
- Location(s) of BMPs that need to be maintained;
- Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location
- Location(s) where additional BMPs are needed that did not exist at the time of inspection
- Corrective action required including any changes to the SWPPP necessary and implementation dates.

Any revision to the SWPPP indicated as a deficiency in the inspection shall be issued within 7 days, with timely implementation following the inspection. A record of each inspection and of any actions taken shall be retained as part of the SWPPP for at least three years from the date that CGP coverage expires or is terminated. The inspection reports shall identify any incidents of non-compliance. Where a report does not identify any incidents of non-compliance, the report shall contain a certification that the construction project or site complies with the SWPPP and the

CGP. The report shall be signed in accordance with the CGP.

7.2 Maintenance of Controls

All erosion and sediment control measures and other protective measures identified in the SWPPP shall be maintained in effective operating condition. If required site inspections identify BMPs that are not operating effectively, maintenance shall be performed as soon as possible and before the next storm event whenever practicable to maintain the continued effectiveness of storm water controls.

Any areas that become damaged during the course of the project will be regraded and reseeded, as necessary, during the life of the project. Any ditches that fill with sediment will be cleaned and regraded.

7.3 Changes to the SWPPP

The SWPPP, including site maps, shall be amended whenever there is a change in design, construction, operation, or maintenance at the construction site that has or could have a significant effect on the discharge of pollutants to the waters of the United States that has not been previously addressed in the SWPPP.

The SWPPP shall be amended by the Contractor if during inspections or investigations by site staff, or by local, state, or federal officials, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site.

Based on the results of an inspection, the SWPPP shall be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within 7 days following the inspection. Implementation of these additional or modified BMPs shall be accomplished before the next storm event whenever practicable.

A log of revisions, changes, and updates to the SWPPP shall be documented.

7.4 Termination of Coverage

The permittee may only submit a NOT after one or more of the following conditions have been met:

- Final stabilization has been achieved on all portions of the site for which they are responsible.
- Another operator has assumed control over all areas of the site that have not been finally stabilized; or
- Coverage under an individual or alternative general NPDES permit has been obtained.

The NOT shall be submitted within 30 days of one of the above conditions being met. Authorization to discharge terminates at midnight of the day the NOT is signed.

7.5 Retention of Records

Copies of the SWPPP and all documentation required by the CGP, including records of all data used to complete the action to be covered by the CGP, will be retained by the permittee for at least three years from the date that the CGP coverage expires or is terminated.

8.0 CERTIFICATION AND NOTIFICATION

OPERATOR CERTIFICATION

I have read and understand and agree to implement the bestmanagement practices and procedures detailed within this Storm Water Pollution Prevention Plan.

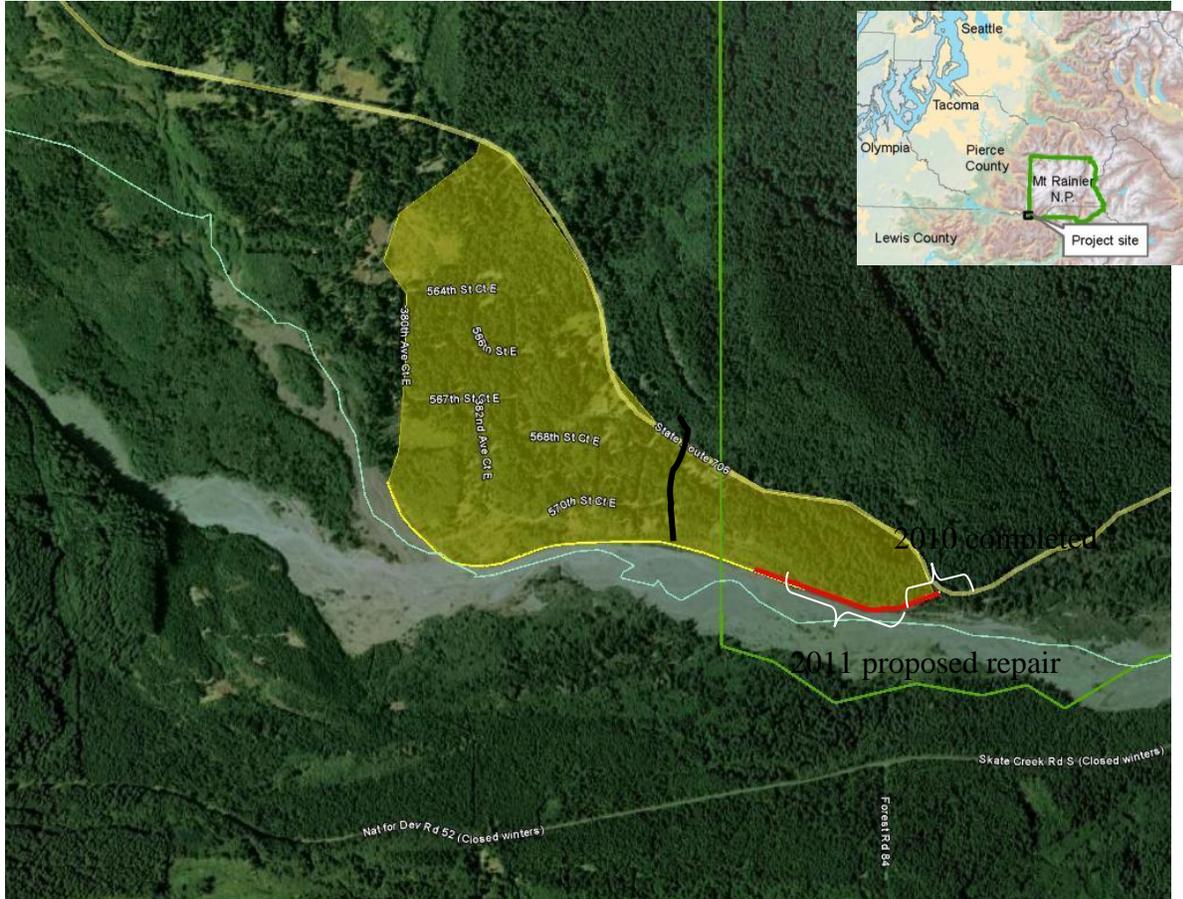
Name: _____ Title: Construction Manager

Signature: _____ Date: _____

Name: _____ Title: Environmental Coordinator

Signature: _____ Date: _____

Attachment A: General Location Maps and Designs



Site location showing the entire levee (yellow line) with the damaged portion (red line) and the area protected by the levee (shaded yellow). The access route is via SR 706 and local roads (black line) and the levee top.

U.S. ARMY CORPS OF ENGINEERS

CENWS-EN-GB-55

PROJECT:
PL 84-99 LEVEE REPAIRS

SUBJECT:
NISQUALLY PARK LEVEE (PUY-7-09)

COMPUTED BY:
GOSS

CHECKED BY:

DATE: 2011.05.03
SHT. 1 OF 4
PART: PLAN VIEW



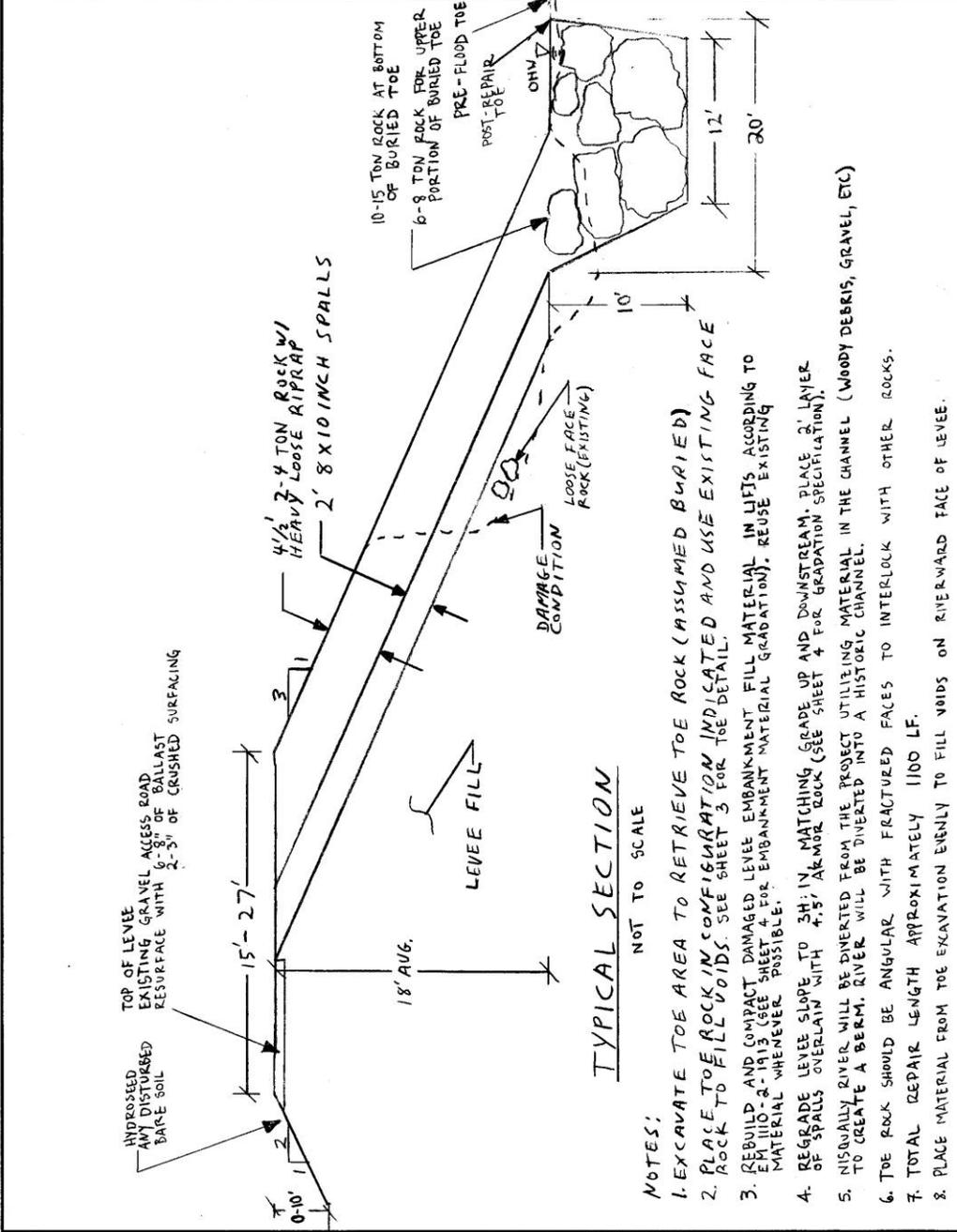
NPD FORM 7A-R (REV) FEB 10 (FOR SEATTLE DISTRICT USE)

(5 Grid)

ENGINEERING DESIGN SHEET

OFFICE SYMBOL: CENWS-EN-6B-55

PROJECT PL84-99 LEVEE REPAIRS	COMPUTED BY RUDIE	DATE: 4 MAR 10
SUBJECT (POY-7-09) NISQUALLY PARK LEVEE	CHECKED BY WEBER	SHEET: 2 OF 4
		PART: SECTION



- NOTES:
1. EXCAVATE TOE AREA TO RETRIEVE TOE ROCK (ASSUMED BURIED)
 2. PLACE TOE ROCK IN CONFIGURATION INDICATED AND USE EXISTING FACE ROCK TO FILL VOIDS. SEE SHEET 3 FOR TOE DETAIL.
 3. REBUILD AND COMPACT DAMAGED LEVEE EMBANKMENT FILL MATERIAL IN LIFTS ACCORDING TO EM 1110-2-1913 (SEE SHEET 4 FOR EMBANKMENT MATERIAL GRADATION). REUSE EXISTING MATERIAL WHENEVER POSSIBLE.
 4. REGRADE LEVEE SLOPE TO 3H:1V MATCHING GRADE UP AND DOWNSTREAM. PLACE 2' LAYER OF SPALLS OVERLAIN WITH 4.5' ARMOR ROCK (SEE SHEET 4 FOR GRADATION SPECIFICATION).
 5. NISQUALLY RIVER WILL BE DIVERTED FROM THE PROJECT UTILIZING MATERIAL IN THE CHANNEL (WOODY DEBRIS, GRAVEL, ETC) TO CREATE A BERM. RIVER WILL BE DIVERTED INTO A HISTORIC CHANNEL.
 6. TOE ROCK SHOULD BE ANGULAR WITH FRACTURED FACES TO INTERLOCK WITH OTHER ROCKS.
 7. TOTAL REPAIR LENGTH APPROXIMATELY 1100 LF.
 8. PLACE MATERIAL FROM THE EXCAVATION EVENLY TO FILL VOIDS ON RIVERWARD FACE OF LEVEE.

U.S. ARMY CORPS OF ENGINEERS

CENWS - EN - GB - 55

PROJECT:

PL-84-99 LEVEE REPAIRS

COMPUTED BY:
T. GOSS

DATE: 2011.01.13

SHT. 30F 4

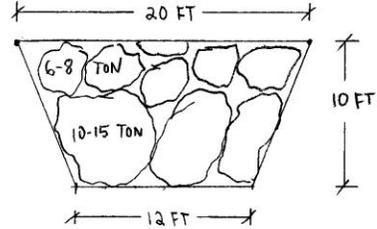
SUBJECT:

NISQUALLY PARK LEVEE (PUY-7-09)

CHECKED BY:

PART: TOE DETAIL

TOE ROCK: 60% 10-15 TONS
 40% 6-8 TONS



SIZE: $\frac{1}{2} \cdot 10 \text{ FT} (20 \text{ FT} + 12 \text{ FT}) = 160 \text{ FT}^2$

LENGTH (FROM KEITH RUDIE) = 1100 FT

FULL VOLUME = $160 \text{ FT}^2 \cdot 1100 \text{ FT} = 176,000 \text{ FT}^3$

TYPICAL TOE SECTION

NOT TO SCALE

$60\% \cdot 176,000 \text{ FT}^3 \cdot \frac{\text{YD}^3}{27 \text{ FT}^3} \cdot 1.5 \text{ TONS/YD}^3 = \underline{5,900 \text{ TONS OF 10-15 TON ROCK}}$

$40\% \cdot 176,000 \text{ FT}^3 \cdot \frac{\text{YD}^3}{27 \text{ FT}^3} \cdot 1.5 \text{ TONS/YD}^3 = \underline{3,920 \text{ TONS OF 6-8 TON ROCK}}$

TOTAL TOE ROCK = 9,820 TONS

ENGINEERING DESIGN SHEET

OFFICE SYMBOL: CENWS-EN-GB-SS

PROJECT PL84-99 LEVEE REPAIRS	COMPUTED BY RUDIE	DATE: 4 MAR 10
SUBJECT (PUY-7-09) NISQUALLY PARK LEVEE	CHECKED BY DES JARDIN	SHEET: 4 OF: 4 PART: MATERIAL

FACE ROCK ARMOR GRADATION

54" BLANKET
 100% SMALLER THAN 8000 LBS
 50% SIZE 4000 LBS
 90% LARGER THAN 1650 LBS
 10% 25-1650 LBS.

LEVEE EMBANKMENT MATERIAL

SEE WSDOT STANDARD SPECIFICATION 9-03.14 (2)
 COMPACT IN LIFTS ACCORDING TO EM 1110-2-1913, TABLE 7-1, CATEGORY 2.

SIEVE SIZE	PERCENT PASSING
4"	100
2"	75-100
NO. 40	50 MAX
NO. 200	10 MAX
SAND	30 MIN

SWPPP
Nisqually Park Levee Rehabilitation
Pierce County, WA



Potential diversion locations.

Attachment B: Ecology Letter of Verification



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
ATTN: Ms. Bobbi Jo McClain
P.O. Box 3755
Seattle, WA 98123-3755

RE: U.S. Army Corps of Engineers Reference No. PL-11-09
Nisqually Park – Flood Control Structure Rehabilitation, Pierce County, Washington

Dear Ms. McClain:

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 18, 2011 JARPA 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,

A handwritten signature in cursive script, appearing to read "Lori Ochoa".

Lori Ochoa
Federal Permit Coordinator
Shorelands and Environmental Assistance Program

cc: Gina Piazza, WDFW

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



Attachment C: Storm Water Pollution Prevention Plan Inspection Form

Date: _____

Name: _____

Title/Qualification: _____

Weather (since last inspection): _____

Weather (today): _____

Note any corrective actions taken and implementation dates: _____

Provide sketch of locations of:

- Discharges.
- BMPs that are being maintained.
- BMPs that have failed/ proved inadequate.
- BMPs that have been added since the last inspection.



APPENDIX D: Clean Water Act Section 404(b)(1) Evaluation

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

Nisqually Park Levee Rehabilitation Pierce 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 (Corps) compliance evaluation of the Nisqually Park levee repair project pursuant to the Clean Water Act (CWA) and the General Regulatory Policies of the Corps. 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 Corps analysis of compliance with the CWA 404(b)(1) and the General Regulatory Policy requirements.

2.0 PROJECT BACKGROUND

This non-Federal rural county levee was constructed to provide flood control protection from the periodic recurring flooding of the Nisqually River near Mount Rainier National Park in Pierce County, Washington. The levee is located at the southwestern corner of the Mount Rainier National Park at approximately River Mile 67.6 to 68.6, near the town of Ashford within Pierce County Washington (Figure 1). The levee is located within Township 15 North, Range 7 East, in the southern half of Section 33, Western Meridian.

The levee is approximately 5,000 LF and is 10-12 feet high on the landward side. The top width varies from 15 to 27 ft. The riverward slope was built at a 3H:1V slope. The levee is predominantly composed of local borrow material with Class V and 3-4 man rock erosion protection on the riverward slope and 6-8 man rock at the toe. The levee was designed to provide a 20-year level of protection. The area is within the historic floodplain of the Nisqually River, and contains multiple single-family residences and summer cabins and associated roads. Highway 706, the only road leading into the southwestern portion of Mount Rainier National Park is also protected by the levee.

3.0 PROJECT NEED AND PURPOSE

3.1 Need

Flood waters resulted in toe scour and loss of embankment material and riverward armor along the Nisqually Park Levee. Reaches along the damaged levee are over-steepened with slopes varying from 1.5H:1V to vertical. Several areas at the upstream end are missing 50-100% of the riverward slope. Toe rock is missing along most of the damaged reach and has moved into the current river channel. The total length of the damaged area was 1,700 feet. In the current condition, the levee offers 5-year level of flood protection. With repair, the levee will be restored to a 20-year level of protection.

This levee is integral to the protection of public safety and property. Emergency interim repairs were completed by Pierce County to the western 600 feet of the damaged section. They will receive credit for their interim repair, which was completed to the same design specifications as the proposed PL84-99 repair. The remaining damage could present a threat of loss of private and/or public property. There are numerous structures protected by this levee, including

residences, businesses, historic landmarks, hotels, and the main entrance into Mount Rainier National Park. An evaluation of the parcels in the immediate vicinity of the flood plain covered a little over 700 acres and showed 86 structures. The need for this project is to ensure that the levee is returned to the pre-damage level of protection in order to minimize chances of levee damage or breaching from a major flood.

3.2 Purpose

The purpose of the project is to repair and return the damaged levee to the level of flood protection found prior to the November 2008 flood event in order to protect lives and property from subsequent flooding.

4.0 PROPOSED ACTION AND ALTERNATIVES

Multiple alternatives were considered including the No-Action Alternative, the Non-Structural Alternative, the Setback Alternative, and the Repair In Place Alternative (the Preferred Alternative). In order for any alternative to be acceptable for consideration it must meet the purpose of the proposed project. The project purpose is to provide for flood protection equivalent to the level of protection that pre-existed the flood event. To meet the requirements of PL 84-99, the selected alternative must meet the project purpose and need, be economically justified, be environmentally acceptable, and should minimize costs for the non-Federal Sponsor and the Federal government to the extent possible.

4.1 No Action Alternative

This alternative consists of leaving the levee in its damaged condition and taking no action to address the damage incurred in the 2009 flood. This alternative has high potential for flood damage to the protected structures and lands behind the levee in the vicinity of the damaged levees, and thus would not meet the project purpose and need.

4.2 Non-Structural Alternative

The Non-Structural Alternative would relocate or flood proof all structures, utilities, and infrastructure within the damage area protected by the levee. However, relocation or flood proofing all of the protected infrastructure quickly, to avoid prolonging vulnerability through the upcoming flood seasons, is impractical and expensive. The non-structural alternative was eliminated from further consideration because costs associated with flood proofing or relocating the structures in the potential inundation area would significantly exceed the cost of repairing the damaged levee.

4.3 Setback Alternative

The Setback Alternative would realign the levee behind the existing levee footprint to allow the Nisqually River more conveyance through the project reach. This alternative would involve the purchase and relocation of the properties behind the levee, in addition to the cost of constructing the new setback levee. This alternative would also have environmental effects associated with construction of the new levee, including the clearing of riparian vegetation.

4.4 Repair in Place (Preferred Alternative)

The Repair in Place Alternative would repair the damage to the levee toe and face and return the levee to its pre-flood level of protection. This alternative would consist of excavating 10 to 12 feet below the toe of the levee to create a new toe of buried 10 to 15 ton rock. The riverward

face of the levee would be regraded to a 3H: 1V slope. A two foot layer of eight to 10 inch spalls would be placed on the riverward face as a filter layer. This would be overlain with a 4.5 ft thick blanket of two to four ton rock armor installed from the toe to the crown. Heavy loose riprap would be mixed with the toe and face rock to achieve satisfactory compaction and fit of the materials. A six-inch gravel lift would be installed along the top of the levee crown to create a drivable surface for inspection and maintenance access. Placement of the toe rock would require diverting the water away from the work site into an ancillary channel to complete the repair in the dry. This is required for safety during construction and would minimize adverse effects on water quality and fisheries resources. The loss of riparian vegetation would be minimized and no wetland areas would be impacted. The Corps would use both existing and imported rock material. This project would also incorporate water quality monitoring and fish exclusion efforts to minimize effects on the aquatic and terrestrial resources in the area.

This alternative was recommended as the proposed action (preferred alternative) because it was the least environmentally damaging and lowest cost alternative that would provide flood protection similar to the rest of the levee segment.

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

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

Under the Preferred Alternative, the face and toe of the levee would be reshaped and repaired to re-establish the 20-year flood event level of protection. No change from the pre-flood condition of the channel configuration or average monthly, annual, or flood flows of the river would be expected. The physical characteristics of the upper Nisqually River are not expected to change as the levee would be repaired using similar materials and within the same basic footprint as the existing levee. The river diversion would not be in place for more than 90 days and would not cause a permanent shift to the thalweg. The repair would prevent the levee from continuing to erode and would thereby prevent levee failure and migration of the river channel in a flood event.

There will be short-term water quality impacts from the diversion of the river and from construction of the repairs. The Corps would monitor water quality during construction within and at the outer edge of a 300-foot mixing zone downstream of the construction. If turbidity exceeds water quality standards (greater than 5 NTU over background if background is <50 NTU, or greater than 10% over background if background is >50 NTU), construction would be stopped or modified to allow turbidity to return to acceptable levels and avoid further exceedances.

There would be a loss of two small stands of conifers on the riverward side of the levee. No trees would be removed on the landward side of the levee. No impact to water quality is expected due to the removal of this small number of trees.

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 roads, residences, and park infrastructure from flooding. The project has a positive economic benefit:cost ratio. Construction will contribute to jobs in the local area.

A cultural resources report was sent on 12 April 2011 to the Washington Department of Archaeology and Historic Preservation (DAHP), detailing the “No Historic Properties Affected” determination and requesting concurrence. The cultural resources assessment of the project area did not yield any cultural materials during the course of a pedestrian reconnaissance survey. In addition, the project is located along the riverward side of the Nisqually River within a high velocity river channel and the likelihood of finding intact archaeological deposits or features is extremely low. The DAHP replied on 18 April 2011, concurring with our determination.

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. Length of the project will be limited to the damaged area. The backslope of the levee will not be disturbed to avoid impact to trees. Water quality monitoring will be completed to avoid excessive turbidity.

b. Impact Minimization Measures

The Corps 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 and water quality monitoring, will be used to ensure that no unnecessary damage to the environment occurs;
- The temporary river diversion will limit turbidity from construction activities;
- Corps biologist will regularly check on construction progress to ensure BMPs are in place and environmental impacts are properly avoided and minimized;
- Corps biologist will regularly perform fish salvage efforts during the river diversion to minimize impacts to fish.

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

The Corps 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

There would be short-term impacts to resident fish and wildlife from repair of the levee. The primary impact would be to water quality, with a temporary increase in turbidity expected during construction. To dewater the worksite, the river would be diverted into a side channel. During the Pierce County repairs in 2010, approximately 800 ft of river was diverted where fish salvage efforts moved approximately 70 cutthroat trout and over 90 sculpin. Fish salvage efforts would be conducted during the 2011 repairs to limit the impact to fish. Because all in-water work would be accomplished during the established fish window (July 15 – September 15), the potential disruption to fish and aquatic wildlife would be minimized.

Construction noise and the operation of the machinery may temporarily disturb any wildlife in the area, but local species are expected to return to their normal activities and habitats after construction is completed (within approximately 2-3 weeks) and during periods without construction activity (i.e. at night). 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. As the project site is located to one of the entrances to the Mount Rainier National Park, traffic in the area is often extensive during the summer peak season such that many wildlife species at the project site are relatively tolerant of humans and their activities.

The Corps anticipates removing two small stands of young conifers from the top of the riverward side of the levee. No wetlands would be impacted by repair of the levee. The existing trees along the backside of the levee would not be disturbed during or as a result of the repair of the levee. Any bare soil areas would be hydro-seeded after construction to control erosion. As the project is located in a heavily forested area, the limited loss of trees for this repair is not expected to cause a significant impact

b. Water Quality.

The Corps concludes that the project is functionally analogous to Nationwide Permit (NWP) 3 pursuant to Section 404 of the Clean Water Act. The repair includes placement of larger toe rock than was previously at the location which would also change the footprint of the buried toe from the pre-flood condition (decreasing the width of the toe below the channel by ~3 feet and increasing the depth ~6 feet). The repair requires temporary dewatering of the work site through diverting the river into an existing side channel. In-stream materials, such as woody debris and boulders, would be used to create the temporary diversion. The Environmental Coordinator consulted a project manager in the Corps Regulatory Branch, who concurred that the change from pre-flood condition constitutes no more than a minor deviation which would be fully consistent with application of NWP 3 to a typical permit applicant.

Furthermore, the Corps has analyzed the project pursuant to the general conditions established by the State associated with authorization under NWP 3. The state conditions of NWP 3 for Section 401 of the CWA and CZM consistency response require individual review due to the minor changes in the project footprint. The project was submitted to

Ecology for review on 18 April 2011. On 5 May 2011 Ecology verified that the project does not require an individual water quality certification and that they determined that the project meets the requirements under NWP 3.

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. The Corps finds that this project is within the public's interest and complies with the substantive elements of Section 404 of the Clean Water 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, cobbles) 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. The Corps will monitor water quality during construction at the 300-foot mixing zone downstream of the construction. If turbidity exceeds water quality standards (greater than 5 NTU over background if background is <50 NTU, or greater than 10% over background if background is >50 NTU), construction would be stopped or modified to allow turbidity to return to acceptable levels and avoid further exceedances.

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 Nisqually River, or that could reduce the suitability of the river for aquatic organisms or recreation.

4. Current patterns and water circulation [230.23]

The Corps expects no longterm disruption of current patterns or water circulation at this site. During construction, the river will temporarily be diverted away from the project area to allow the construction to occur safely and to limit turbidity. The diversion berm will be removed at the end of construction.

5. Normal water fluctuations [230.24].

The Nisqually River is subject to periodic high and low flows due to weather patterns and runoff; 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]

There are seven species listed as threatened under the ESA listed species present in Mount Rainier National Park: northern spotted owl (*Strix occidentalis occidentalis*), marbled murrelet (*Brachyramphus marmoratus*), Canada lynx (*Lynx canadensis*), grizzly bear (*Ursus arctos*), Chinook salmon, bull trout (*Salvelinus confluentus*), and steelhead. There is also one candidate species, fisher (*Martes pennanti*) and one proposed species, Dolly Varden (*Salvelinus malma*).

The project is located within suitable spotted owl habitat; however, there are no known territories in the area based on surveys. The likelihood of the presence of marbled murrelets occurring in the Nisqually River drainage is considered low, it is assumed that they occupy the area due to the presence of suitable habitat adjacent to project area and the detection of

low numbers of murrelets nearby using marine radar. On 27 May 2011, USFWS and the Corps surveyed the project area and the vicinity for marbled murrelet habitat and none was found. The project will not remove any forested habitat. Direct and short-term impacts to spotted owls and marbled murrelet would be related to noise disturbance and activity created by heavy equipment. Restricting activity to the late nesting season reduces potential impacts to spotted owls and marbled murrelet.

Due to the low likelihood of the occurrence of Canada lynx or the grizzly bear within the Park and adjacent to project activities, the limited amount of time the activity would take place, and because there would be no habitat removal, there would be no effect to Canada lynx, or grizzly bear. There are no known populations of bull trout or listed salmonids in the Nisqually River upstream of Alder Dam. Therefore, there would be no effect to bull trout, Chinook salmon, or steelhead, or their critical habitat.

Due to the limited duration of proposed activities and timing restrictions imposed that would limit work to late nesting seasons, and because there would be no habitat removal, the proposed action may affect, but is not likely to adversely affect the marbled murrelet, and would have no effect on the northern spotted owl, Canada lynx, grizzly bear, bull trout, Chinook salmon, or steelhead.

The Corps entered into an informal consultation with the U.S. Fish and Wildlife Service (USFWS) via submittal of a BE on 20 April 2011 regarding the proposed emergency repair of the Nisqually Park levee. The BE addressed the known occurrences and the potential impacts of the proposed project on these species under the jurisdiction of USFWS. In 2010, Pierce County, in concert with the National Park Service, completed consultation on the initial repair of the eastern 600 ft of the damage (NPS 2010). No consultation with National Marine Fisheries Service (NMFS) is needed as there is no effect on salmonids or essential fish habitat. A letter from USFWS stating their concurrence with our determination and noting any further conservation measures needed to limit impacts to listed species would be needed prior to construction.

- 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 the Corps would occur only 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 period of construction, they are expected to be inconsequential and temporary.

Potential Impacts on Special Aquatic Sites [Subpart E]:

- 1. Sanctuaries and refuges [230.40]**

The project is within the boundary of the Mount Rainier National Park. The project has been coordinated with the National Park Service. The repairs are not expected to disrupt the

critical life requirements of resident or transient fish or wildlife resources in the project area. As the site is located near one of the main entrances to the Park and near what had been a campsite, the wildlife in the area are accustomed to some level of human activity and disturbance. The project will restore the pre-damaged level of flood protection and will replace lost riprap in a similar configuration as that prior to the damaging flood. No change to human access is expected. The design creates a larger buried toe to decrease the need for frequent repair activity.

2. Wetlands [230.41]

A Corps biologist found no wetlands to be present in the project footprint.

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 area is dominated by riffles. The larger reach is mostly riffles with some glides and few pools. The repair is not expected to disrupt or change the riffles or pools in the Nisqually River. .

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 at the construction site; 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]

The project is within the boundary of the Mount Rainier National Park. The project has been fully coordinated with the National Park Service. The repairs will protect one of the main entrances to the Park as well as Park buildings and infrastructure. No long term change to the accessibility of the river is expected at the project site from the pre-damaged condition, though access to the area will be limited during construction for safety.

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. Clean angular toe and face rock will be imported as needed to restore the flood control structure. All materials will be placed using a track excavator. The maximum quantity of imported material is: 9,820 tons (6520 yd³) of toe rock, 9,600 tons (6400 yd³) of face rock, and 2,620 tons (1,750 yd³) of spall rock.

- 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, Pierce County will be expected to address it as a part of their general operations and maintenance of this levee.
- 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, temporary increases in turbidity, and river diversion efforts. Because these impacts will occur only during the construction, they are expected to be inconsequential and temporary. The landward slope of the levee will not be disturbed.
- 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 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)]**
The Corps 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 Corps 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)]**
The Corps concludes that the project is functionally analogous to Nationwide Permit (NWP) 3 pursuant to Section 404 of the Clean Water Act. The repair includes placement of larger

toe rock than was previously at the location which would also change the footprint of the buried toe from the pre-flood condition (decreasing the width of the toe below the channel by ~3 feet and increasing the depth ~6 feet). The repair requires temporary dewatering of the work site through diverting the river into an existing side channel. In-stream materials, such as woody debris and boulders, would be used to create the temporary diversion. The Environmental Coordinator consulted a project manager in the Corps Regulatory Branch, who concurred that the change from pre-flood condition constitutes no more than a minor deviation which would be fully consistent with application of NWP 3 to a typical permit applicant.

Furthermore, the Corps has analyzed the project pursuant to the general conditions established by the State associated with authorization under NWP 3. The state conditions of NWP 3 for Section 401 of the CWA and CZM consistency response require individual review due to the minor changes in the project footprint. The project was submitted to Ecology for review on 18 April 2011. On 5 May 2011 Ecology verified that the project does not require an individual water quality certification and that they determined that the project meets the requirements under NWP 3 (Appendix C). 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)]

A cultural resources report was sent on 12 April 2011 to the Washington Department of Archaeology and Historic Preservation (DAHP), detailing the “No Historic Properties Affected” determination and requesting concurrence. The cultural resources assessment of the project area did not yield any cultural materials during the course of a pedestrian reconnaissance survey. In addition, the project is located along the riverward side of the Nisqually River within a high velocity river channel and the likelihood of finding intact archaeological deposits or features is extremely low. The DAHP replied on 18 April 2011, concurring with our 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, Pierce County.

8. Activities affecting coastal zones [320.4(h)]

Pierce County is considered coastal under the CZMA. This project has been determined to be consistent with the Washington Shoreline Management Plan. The Pierce County Shoreline Master Program does not apply to the project location as the project lies within the National Park, which is outside of the boundary stated in the document. The determination of consistency is further confirmed through analogy to the provisions of the regional conditions under Nationwide Permit 3 pursuant to the Corps of Engineers’ Clean Water Act Section 404 permitting program. Although Corps’ Civil Works projects can’t be permitted by nationwide permits, discussion with Corps’ Regulatory Branch have verified that the project fits within the general requirements of Nationwide Permit (NWP) 3. The state conditions of NWP 3 for Section 401 of the CWA and CZM consistency response require individual review due to the minor changes in the project footprint. The project has been submitted to Ecology for review on 18 April 2011. Concurrence was received on 5 May 2011..

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 [320.4(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 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 project does not include any compensatory mitigation. However, 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:

- (1) The Corps would halt any activities upon discovery of threatened or endangered species or archeological, paleontological, or historical findings.
- (2) Construction activities and staging would occur after the marbled murrelet and northern spotted owl early nesting seasons, and may commence during the late nesting seasons no earlier than August 6. Note: Staging of materials and equipment may occur west of the park boundary prior to August 6, where habitat is not present.
- (3) Northern spotted owl surveys are ongoing, and the park may provide specific locations of owl territories. Exclusion zones would be based on the most recent information available and may change within a season as new information is gained. Currently there are no known spotted owl nest sites within or near the project area.
- (4) The following measures would be taken to limit noise and disturbance from vehicles and construction equipment, including trucks used to transport equipment to and from staging areas:
 - d. Equipment would not be allowed to idle longer than 15 minutes when not in use.
 - e. All motor vehicles and equipment would have mufflers conforming to original manufacturer specifications that are in good working order and are in constant operation to prevent excessive or unusual noise, fumes, or smoke. Mufflers and sound attenuation devices (such as rubber strips or sheeting) would be installed and maintained on all equipment. This includes truck tail and other gate dampeners (both opening and closing) for all dump trucks on the project. Use of un-muffled engine brakes or Jake Brakes is prohibited in the park unless required for safety.
 - f. Use of air horns within the Park would be limited to emergencies only.
- (5) Any wildlife collisions would be reported to the National Park Service immediately.

- (6) In-water work would be restricted to the fish window identified by the Washington Department of Fish and Wildlife, which is July 15 to September 15.
- (7) Further actions recommended by USFWS pursuant to ongoing coordination under the Endangered Species Act would be undertaken.
- (8) Vegetable based hydraulic fluid would be used in heavy equipment assigned to work in the river channel. Spill control kits would be onsite during operations.



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
ATTN: Ms. Bobbi Jo McClain
P.O. Box 3755
Seattle, WA 98123-3755

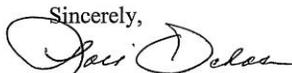
RE: U.S. Army Corps of Engineers Reference No. PL-11-09
Nisqually Park – Flood Control Structure Rehabilitation, Pierce County, Washington

Dear Ms. McClain:

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 18, 2011 JARPA 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: Gina Piazza, WDFW

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



APPENDIX E: Finding of No Significant Impact



REPLY TO
ATTENTION OF

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

CENWS-PM-ER

**2011 Nisqually Park Levee Rehabilitations
Pierce County, Washington**

FINDING OF NO SIGNIFICANT IMPACT

1. Background. Under Public Law 84-99 emergency response authority, the U.S. Army Corps of Engineers, Seattle District (Corps), in concert with Pierce County, Washington is proposing to repair the Nisqually Park levee (River Mile 67.6 to 68.6) on the Nisqually River, Pierce County, Washington. Repairs are intended to address damage caused during flooding. Flooding occurred on the Nisqually River in November 2008 with a 13-year flood event occurring at the National gauge. Intense rainfall and rapid snowmelt were a result of a high velocity jet stream which is a common weather pattern experienced in this region.

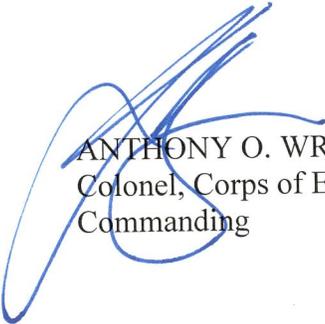
2. Proposed Action. The preferred alternative is to repair the damaged areas of the Nisqually Park Levee to the pre-flood level of protection. Repairs will increase the size of the armor rock, including excavating 10 to 12 feet below the toe of the levee to create a buried 10 to 15 ton rock. The riverward face of the levee would be regraded to a 3H: 1V slope. This would be overlain with a spalls filter layer and a blanket of 2 to 4 ton rock armor. Heavy loose riprap would be mixed with the toe and face rock to achieve satisfactory compaction and fit of the materials. Placement of the toe rock would require diverting the water away from the work site into an ancillary channel to complete the repair in the dry. This is required for safety during construction but would also minimize adverse effects on water quality and fisheries resources. Two potential berm locations with three potential diversion channels have been identified with final selection being made just prior to construction based on minimizing length of diversion and effort of excavation. Vegetation on the riverward face if the levee will be removed to complete the repair, but vegetation on the backslope will not be removed. Disturbed areas will be hydroseeded with native grasses to encourage vegetative growth.

3. Impacts Summary. The attached environmental assessment provides an evaluation of the potential environmental impact as a result of the Preferred Alternative (repairing the levee in place). Impacts from the rehabilitation action are limited. Specifically, a few overstory trees will be removed to repair the riverward face of the levee. The limited loss of trees in this heavily forested area will not cause a significant change to the distribution, character, or abundance of riparian vegetation in the reach. Temporary and localized impacts to turbidity and fish are anticipated due to the dewatering of the site. Fish salvage efforts and turbidity monitoring will be completed during construction. Temporary impacts are expected from noise and vibration disturbance created by use of machinery. Air quality impacts will be *de minimis*. The Corps has provided documentation to the U.S. Fish and Wildlife Service (20 April 2011) with a finding of **may affect, but not likely to adversely affect** marbled murrelet. The primary impact to murrelets will be noise disturbance during nesting; however surveys have shown no suitable nesting habitat within a 35-yard buffer of the work area so that impacts will be minimal. The

Corps coordinated the cultural resources investigations and compliance with the Nisqually Indian Tribe and the Washington State Historic Preservation Office to ensure their awareness and opportunity to provide concerns and comments on Usual and Accustomed fishing rights, cultural resource impacts, and general environmental impacts. No wetlands will be filled or impacted during the rehabilitation of the levee. The project is within the Mount Rainier National Park and will impact recreation and aesthetics in the project vicinity during the construction period. The repair includes placement of larger toe rock that is expected to limit future repairs and maintains the current levee placement so that cumulative effects of past, present, and reasonably foreseeable future actions are not expected to be significant.

4. Conclusion. I find that the proposed action will not result in significant adverse environmental impacts and complies with all applicable laws, regulations, and agency consultations including the Clean Water Act, Endangered Species Act, Coastal Zone Management Act, and National Environmental Policy Act, as well as Executive Orders. Based on the analysis described above and provided in more detail in the accompanying Environmental Assessment, this project is not a major Federal action significantly affecting the quality of human environment and, therefore, does not require preparation of an environmental impact statement.

Date 16 JUNE 2011



ANTHONY O. WRIGHT
Colonel, Corps of Engineers
Commanding