

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
SKAGIT RIVER DIKING DISTRICTS 1, 3, AND 12 LEVEE REPAIR PROJECTS
SKAGIT COUNTY, WASHINGTON

The U.S. Army Corps of Engineers, Seattle District (USACE) has conducted an environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. The Final Environmental Assessment (EA) dated June 2023, for the Skagit River Diking Districts (DD) 1, 3, and 12 Levee Repair Projects addresses flood damage to the levees near the cities of Mount Vernon and Burlington and unincorporated Skagit County, Washington.

The Final EA, incorporated herein by reference, evaluates various alternatives to restore flood protection to the damaged levee. Two Federal actions require NEPA compliance and analysis in the Final EA summarized below. The two Federal actions consist of the emergency response activities during the February 2020 and November 2021 flood fights and the proposed 2023 levee repairs.

Proposed Action: The preferred alternative is the Repair In-Place alternative. This alternative will repair the Skagit DD 1, 3, and 12 Levees within the horizontal and vertical profiles as they were designed and as they existed when first built. Repair activities for this alternative are summarized in section 2.4 of the Final EA and are hereby incorporated by reference.

Alternatives: In addition to a “no action” plan, three alternatives were evaluated. The alternatives include the Nonstructural, Levee Setback, and the Repair In-Place. Of these, the potential effects were evaluated for the No Action and the Repair In-Place alternatives.

See section 2 of the Final EA for alternative formulation and selection. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Proposed Action

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Vegetation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Geology and Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Threatened and Endangered Species	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fish and Wildlife	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cultural Resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hazardous, Toxic, and Radiological Waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Air Quality and Noise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Use, Utilities, and Infrastructure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Recreation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Impact Minimization: All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices, as detailed in section 2.5.3 of the Final EA, will be implemented to minimize impacts. Measures include water quality monitoring and restricting in-water work to June 15 to August 31 to minimize construction related impacts to protected salmon.

Mitigation: The recommended plan will result in unavoidable adverse impacts to habitat as a result of vegetation removal due to construction activities. To mitigate for these unavoidable adverse impacts, the USACE will incorporate two rows of willow bundles or willow lifts into the length of each repair, hydroseed all disturbed areas after construction is complete, incorporate slope laybacks at DD 12 (Sites 1-3), place unanchored large woody material along the shoreline of the DD 1 and DD12 repairs, and install 17 anchored rootwads at an offsite location downstream of the DD 3 Levee repair.

Public Review: Public review and comment of the Notice of Preparation for the proposed Skagit River Diking District 1, 3, and 12 Levee Repair Projects was completed on April 9, 2023. Comments and responses are included in Appendix D of the Final EA.

Tribal Consultation and Coordination: The Sauk-Suiattle Indian Tribe, Samish Indian Nation, Upper Skagit Indian Tribe Swinomish Indian Tribal Community, Tulalip Tribes, and the Skagit River System Cooperative were contacted regarding the levee repairs, and the USACE will continue to coordinate throughout the project to meet all USACE obligations to Tribes. To date, letters have been received from the Upper Skagit Indian Tribe; and the Skagit River System Cooperative, sent on behalf of both the Swinomish Indian Tribal Community (SITC) and the Sauk-Suiattle Indian Tribe. Concerns were raised regarding the adequacy and extent of proposed mitigation for these specific rehabilitation projects, as well as support for pursuing levee setback alternatives instead of repair-in-place alternatives, and additional mitigation and monitoring to validate assumptions as to effectiveness of vegetation plantings. Further concerns were raised more broadly, related to impacts attributed to successive rehabilitation projects within a levee system, and a desire to provide for increased connectivity with the floodplain landward of the levees. The USACE updated the mitigation proposed for the rehabilitation projects at DD 1, 3, and 12; and addressed project-specific concerns raised by the Upper Skagit in Appendix K. The USACE is committing to meeting further with the Upper Skagit Tribe to further discuss these broader programmatic concerns with levee rehabilitation projects under PL 84-99.

Compliance:

a. Endangered Species Act:

The National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS) are responsible for administering the Endangered Species Act of 1973 (ESA). The USACE evaluated potential effects to endangered species in a Biological Assessment (BA). ESA consultation was initiated with submission of a BA to the USFWS and NMFS on March 30, 2021. The NMFS provided a biological opinion dated November 8, 2021. However, before the work could be completed, additional flooding occurred in November 2021. The USACE submitted an amendment to the BA on March 14, 2023, which incorporated the additional emergency flood fights and new damage sites as a result of the November 2021 flood event. Consultation is not yet concluded. The USACE reached the following effect determinations for ESA-listed species from the project in the BA:

- May affect, likely to adversely affect Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*) and Puget Sound Chinook salmon critical habitat.
- May affect, likely to adversely affect Puget Sound steelhead (*O. mykiss*) and Puget Sound steelhead critical habitat.
- May affect, likely to adversely affect Coastal/Puget Sound bull trout (*Salvelinus confluentus*) and Coastal/Puget Sound bull trout critical habitat.
- May affect, not likely to adversely affect Southern Resident killer whale (*Orcinus orca*) and Southern Resident killer whale critical habitat.

b. Magnuson-Stevens Fishery Conservation and Management Act:

The USACE determined that the proposed action may adversely affect Essential Fish Habitat (EFH) for Chinook, coho (*O. kisutch*), and pink (*O. gorbuscha*) salmon. This determination was included in the BA and the BA amendment sent to the NMFS on March 30, 2021, and March 14, 2023, respectively. Although final EFH conservation recommendations are still forthcoming for the revised project, the USACE has considered the recommendations included in NMFS's November 8, 2021 joint biological opinion and EFH response, which the USACE intends to address as follows: (1) The USACE will participate in, and encourage further conversation between and amongst the Diking Districts, Skagit County, Cities in Skagit County, the Services, and interested tribes to discuss the existing flood control system, including how further connection to the floodplain may be restored, and (2) the USACE has committed to monitoring of vegetation plantings for up to two years post-construction, as well as adaptive management of unsuccessful plantings for a limited window of time to further inform the assessment of functionality benefits provided by the federal rehabilitation project.

The USACE intends to proceed with construction prior to completion of consultation with NMFS pursuant to the "emergency Federal actions" provision of the EFH regulations, and to complete EFH consultation after the fact pursuant to 50 CFR Section 600.920(a). The USACE will reevaluate the EA at the time that EFH consultation is complete. If necessary, the USACE will supplement the EA and FONSI, as necessary.

Due to the urgent nature of completing the emergency action to protect human safety and property and the effort to limit impacts to ESA-listed species by working within the in-water work window, and because the repair is time critical in light of the ensuing flood season, USACE may proceed with construction prior to completion of the consultation with the Services pursuant to the "emergency circumstances" provisions of the ESA consultation regulation, and may complete ESA consultation after the fact rather than delaying the urgent work in order to complete ESA consultation before construction begins.

The USACE will commit to fully funding and performing all Reasonable and Prudent Alternatives necessary to avoid the likelihood of jeopardy to listed species or destruction or adverse modification of designated critical habitat, as well as Reasonable and Prudent Measures necessary and appropriate to minimize the impact of Incidental Take, that are described if a Biological Opinion is received from USFWS and NMFS. The USACE has incorporated into the proposed action the terms and conditions from the 2021 Biological Opinion from NMFS and expects similar terms and conditions for the work under reinitiated consultation. The EA will be reevaluated at the time that consultation is complete. If necessary, the EA will be supplemented with necessary and applicable corresponding modifications to the scope and/or nature of the project, the procedures and practices used to implement the project, and/or the type and extent of compensatory mitigation associated with the project, and this FONSI will be reassessed.

c. Clean Water Act:

The USACE has determined the proposed repairs to the DD 1, DD 3, and DD 12 Site 3 Levees are exempt from the Clean Water Act (CWA). The proposed work at DD 1, DD 3, and DD 12 Site 3 does not include fill regulated under Section 404 of the CWA because the repairs meet the parameters of the maintenance exemption under Section 404(f)(1)(B) (33 U.S.C. 1344(f)(1)(b), 33 CFR 323.4(a)(2)).

The USACE has determined that repairs to DD 12 Sites 1 and 2 are not exempt from CWA 404. The offsite mitigation for the DD 1 and DD 3 levees requires CWA Section 404 compliance as well. The USACE does not issue Section 404 permits to itself for its own civil works activities, but the USACE addresses substantive compliance with the 404(b)(1) guidelines and other substantive requirements of the CWA and other environmental laws. The work at DD 12 Sites 1 and 2 is functionally analogous to activities covered by Nationwide Permit (NWP) 3 and the offsite mitigation associated with the DD 1 and DD 3 repairs is functionally analogous to the activities covered by NWP 27. A 404(b)(1) analysis and Public Interest Evaluation were conducted by USACE for the issuance of NWP 3 and NWP 27; USACE determined that the activities authorized by the NWPs do not have more than a minimal adverse impact on water quality and the aquatic environment and that permitting the covered NWP activities was in the public interest. USACE adopts and incorporates by reference the previous analysis (86 FR 73522, Reissuance and Modification of Nationwide Permits; 2021 Nationwide Permit 03_Final Decision Document, COE-2020-0002-0572; 2021 Nationwide Permit 27_Final Decision Document, COE-2020-0002-0593). USACE has analyzed the DD 12 Sites 1 and 2 repairs and offsite mitigation pursuant to the general and NWP-specific conditions established by Washington State for the general Water Quality Certification associated with authorization under NWP 3 and NWP 27 and concluded that the proposed work satisfies those conditions. Based on review of these state-specific conditions, this project is covered by the certification approved for these NWPs and an individual Section 401 Water Quality Certification is not required.

Section 402 of the CWA is triggered when a construction site would have greater than 1 acre of ground disturbance. The proposed repairs to the DD 1 and DD 3 levees do not exceed 1 acre of ground disturbance, and do not trigger this provision. The DD 12 Sites (1-3) cumulatively exceed 1 acre of ground disturbance. Because the DD 12 work is below 5 acres and the calculated rainfall erosivity factor value is less than 5, the USACE determined it met EPA's small construction waiver conditions. The USACE therefore applied for an Environmental Protection Agency (EPA) small construction waiver using the EPA Rainfall Erosivity Calculator and received a waiver.

d. Coastal Zone Management Act:

The USACE has determined that the proposed repairs are consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Management Program. The USACE sent a Coastal Zone Management Act (CZMA)

Consistency Determination to Ecology on April 7, 2023, requesting concurrence that the proposed repairs are consistent to the maximum extent practicable with the enforceable policies of the approved Coastal Zone Management Program. Ecology concurred with the USACE's consistency determination on June 7, 2023.

e. National Historic Preservation Act:

The USACE initiated consultation with the Washington State Historic Preservation Officer (SHPO) on the Area of Potential Effect (APE) on February 6, 2023. The SHPO agreed with the APE on the same day. The USACE also coordinated with the Samish Indian Nation, Upper Skagit Indian Tribe, Sauk-Suiattle Indian Tribe, Swinomish Indian Tribal Community, and the Tulalip Tribes seeking information on historic properties of cultural or religious significance that may be affected. USACE has not received any responses from Tribes involving the NHPA.

Based on the literature review and a records search, cultural resource survey, and coordination with DAHP and the contacted Tribes, USACE determined that the proposed repairs would have no adverse effect to historic properties within the APE that are listed in or determined eligible for listing in the NRHP. For DD 3 and DD 12 site 1, the DAHP concurred with the findings from the October 2020 survey and report. A finding of No Adverse Effect was determined in 2021 (DAHP Project: 2021-03-01287 2021). Additionally, DAHP concurred with USACE determination for DD 1 and DD 12 site 2 and 3 (DAHP Project: 2023-01-00372 /2023-01-0037-COE-S).

Determination:

a. Summary of Impacts and Compliance:

Impacts of the proposed work will be minor, short-term, and temporary. This project is undergoing ESA and EFH consultation; a BA amendment has been prepared and transmitted to NMFS and USFWS. Impacts to ESA listed fish and their prey will be minimized by construction during the in-water work window of June 15 to August 31. Consultations under the Section 7 and EFH regulations are not complete, but the USACE will proceed with urgently needed repairs under the emergency circumstances provisions of those regulatory regimes, as described above. The USACE commits to fully funding and performing all Reasonable and Prudent Alternatives necessary to avoid the likelihood of jeopardy to listed species or destruction or adverse modification of designated critical habitat, as well as Reasonable and Prudent Measures necessary and appropriate to minimize the impact of Incidental Take, that are described in the Biological Opinion received from USFWS and NMFS. The USACE has reviewed and incorporated the reasonable and prudent measures from the 2021 Biological Opinion and have integrated those into the proposed action. CZMA coordination has been completed. Repairs to DD 1 are exempt from Section 404 of the CWA and Section 401 Water Quality Certification is not required. Repairs to DD 3 are exempt from Section 404 of the CWA and Section 401 Water Quality Certification is not required. Repairs to DD 12 site 1 are exempt from Section 404 of the CWA and Section 401 Water Quality

Certification is not required. Repairs to DD 12 sites 2 and 3 are functionally analogous to work authorized by Nationwide Permits (NWP) 3 and is covered by the certification approved for this NWP and an individual Section 401 Water Quality Certification is not required. The offsite mitigation for DD 1 and DD 3 repairs are functionally analogous to work authorized by NWP 27 and is covered by the certification approved for this NWP and an individual Section 401 Water Quality Certification is not required. The DD 1, DD 3, and DD 12 Site 3 repairs are exempt from the CWA. The USACE has determined that repairs to DD 1, DD 3, and DD 12 Sites 1 and 2 are not exempt from CWA 404. The DD 12 Sites 1 and 2 repairs are functionally analogous to NWP 3 and the off-site mitigation for DD 1 and DD 3 are functionally analogous to NWP 27. The project complies with the National Historic Preservation Act and the USACE has coordinated the work with the Washington SHPO and affected Indian Tribes. The USACE will continue to coordinate with the Tribes, including the Upper Skagit Indian Tribe, on program level concerns with the PL 84-99 program.

District Engineer's Conclusion: All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on the analysis presented in the Final EA, which has incorporated or referenced the best information available; coordination to date with other Federal, State, and local agencies, Tribes; input of the public; and the review by my staff, it is my determination that the recommended plan will not cause significant effects on the quality of the human environment and does not require preparation of an environmental impact statement.

7/1/23

Date

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Alexander "Xander" L. Bullock
Colonel, Corps of Engineers
District Commander

FINAL ENVIRONMENTAL ASSESSMENT

SKAGIT LEVEE REHABILITATION (DIKING DISTRICTS 1, 3, AND 12)
SKAGIT COUNTY, WASHINGTON



June 2023



Seattle District
Corps of Engineers

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Skagit Levee Rehabilitation (Diking Districts 1, 3, and 12) Environmental Assessment

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Acronyms and Abbreviations

AEP	Annual exceedance probability
AIRFA	American Indian Religious Freedom Act
APE	Area of potential effect
BA	Biological Assessment
BiOp	Biological Opinion
BMP	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
CWA	Clean Water Act
CY	cubic yards
DAHP	Washington State Department of Archeology and Historic Preservation
DD	Diking District
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ER	Engineering Regulation
ESA	Endangered species act
FoNSI	Finding of No Significant Impacts
ft	Foot/feet
H:V	Horizontal to Vertical ratio, measured in feet
LF	linear feet
LOP	Level of Protection
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NOP	Notice of Preparation
NRHP	National Register of Historic Places
RPMs	Reasonable and Prudent Measures

1 INTRODUCTION

The purpose of an Environmental Assessment (EA), as reflected in 40 CFR Sections 1500.1(a) and 1501.5(c)(1) of the Council on Environmental Quality regulations implementing the National Environmental Policy Act of 1969 (NEPA) as amended, is to “*provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement [EIS] or a finding of no significant impact [FoNSI]*” on actions authorized, funded, or carried out by the Federal Government, and “*ensure Federal agencies consider the environmental impacts of their actions in the decision making process.*” Pursuant to Section 102(C) of the NEPA, this assessment evaluates environmental consequences of the proposed rehabilitation action to be implemented by the U.S. Army Corps of Engineers (USACE) at the Skagit Levee located near the cities of Burlington and Mount Vernon, Skagit County, Washington.

1.1 BACKGROUND

The Skagit County Dike District No. 1 (DD 1) levee segment is the middle segment of a 3-segment levee system that includes DD 9 and DD 12. The levee location is along the right bank of the Skagit River mainstem extending from about river mile 13.1 to 8.6, and 8.6 to 4.6 of the North Fork Skagit River, right bank, near the town of Mount Vernon in Skagit County, Washington. The levee was originally constructed of locally available earthen materials with class V riprap for erosion protection on the riverward bench slope. Riverward slopes vary from 1 horizontal (H):1 vertical (V) to 4H:3V, and landward slopes vary from 2H:1V to 3H:1V. Riverward of the levee, an approximately 20- to 40-foot-wide bench leads to the riverbank. The bench is covered in sod underlain by riprap to maintain the bank and prevent scour of the levee foundation.

The Skagit County DD 3 Main levee is located on the left bank of the Skagit River near Mt. Vernon, Washington. It is roughly 43,800 feet long and is the upstream portion of a 3-segment system. In its undamaged state, the levee provides a 50-year level of protection (LOP) to the City of Mount Vernon and surrounding agricultural areas. The embankment is constructed of silty sand and gravel. Crest width is typically about 17 feet. The riverward slopes are approximately 3.5H:1V and the landward slopes are approximately 2H:1V. The riverward slope is typically protected with Class IV riprap. The levee in the damaged area has a riverside slope of about 1.5H:1V. In 2011, the diking district installed a sheet pile seepage cutoff and floodwall with a paved path along the upstream end of the levee near downtown Mount Vernon. The total length of the floodwall is approximately 1 mile.

The Skagit County DD 12 is located on the right bank of the Skagit River near the town of Burlington in Skagit County, Washington. It is approximately 6.4 miles long and is the upstream segment of a 3-segment system that protects urban, residential, commercial, agricultural, and public lands. In its undamaged state, it provides a 50-year LOP to the town of Burlington and surrounding areas. The levee is an earthen material levee with armor rock on the riverward side. The embankment is constructed of silty sand and sandy silt, with Class IV riprap for scour protection. Levee side slopes are typically 1.5-2H:1V on the riverward side and 4.5H:1V on the landward side. Crest width is typically approximately 25 feet, and the embankment height is approximately 11 feet. Riverward of the levee, a 20- to 40-foot-wide bench is present between the levee and the riverbank. This bench is covered with sod and armored with riprap to prevent scour of the levee foundation.

1.1.1 Disaster Incident

February 2020 Flood Summary

The first week of February 2020 brought an atmospheric river event into the Pacific Northwest, including copious amounts of rain, warmer temperatures, and higher snow levels. The heavy rainfall combined with rapid snowmelt caused flooding across Washington, with some places exceeding record values. While the Skagit River did not see extreme flooding, a smaller discrete event occurred. The Skagit River exceeded flood stage in early February 2020. Excessive precipitation resulted in sustained river levels above Phase 1 flood stage for 1 day (February 1 into February 2). Based on flow analysis at the USGS gage on the Skagit River near Mount Vernon (USGS 12200500), this was approximately a 40 percent annual exceedance probability (AEP) event (2.5-year return period). As a result of this flood event, damage occurred to both the DD 3 and DD 12 (site 1) levees. During the flood, the USACE received an assistance request from DD 12 and conducted flood fight activities at the DD 12 levee. The USACE response is summarized below.

DD 3:

At the DD 3 levee, a slope failure occurred along approximately 60 linear feet (LF) due to a combination of riprap being scoured from the riverward toe and saturated conditions of the levee embankment material (Photographs 3 and 4, Appendix A). The failure created a near-vertical head scarp roughly 15 feet tall. This failure threatens the integrity of the sheet pile cutoff and the floodwall constructed along the landward edge of the levee crest.

DD 12 Site 1:

At DD 12 (site 1) the non-federal sponsor noted cracking in the bench between the levee and the river during the February flood event. The non-federal sponsor began construction of an access road to reach the damaged sections, using quarry spalls and geofabric. The USACE took over the flood fight response and constructed emergency bank stabilization over approximately 300 LF of the bench (Photograph 8 and 9, Appendix A). This bench and the associated riprap armoring is critical to the levee performance and has been identified as an appurtenant levee component in previous levee inspections. The purpose of the emergency repair was to temporarily provide supplemental protection to prevent levee failure. During the flood fight, riprap was placed within the footprint of the existing levee. The bench has a revetment that extends to the river bottom. To reduce the threat of rotational failure, the flood team removed material from the upper third of the revetment slope and replaced it with riprap. After floodwaters receded, the non-federal sponsor observed additional cracking in the silt bench extending approximately 200 LF on either side of the repair (Photograph 7, Appendix A). This cracking indicates that the riverward slope of the bench is unstable, and it continues to slide into the river. In the damaged condition, the DD 12 levee is providing a 99.9 percent AEP (1-year LOP).

The temporary emergency action at DD 12 reduced the imminent threat of levee failure, but the levee prism remains in a damaged state and scour protection along the toe was not addressed by the flood fighting action due to the high-water level. The flood fight action was required to prevent levee failure; however, it was not feasible or prudent to fully restore scour protection due to the high water levels. Even with the addition of armor rock, part of the levee prism remains in a compromised state. If the levee were to fail, several structures (commercial and residential) could be flooded, and public infrastructure could be damaged.

November 2021 Flood Summary:

Another atmospheric river event brought heavy rainfall to the region in November 2021, resulting in widespread flooding across the Skagit River basin. The USACE-directed operations at the Upper Baker Dam and Ross Dam provided a substantial reduction of flows in the

mainstem Skagit River, though the river still peaked above major flood stage. The Skagit River near the city of Mount Vernon USGS gage 12200500 peaked above major flood stage on November 15, 2021. Based on flow analysis at this gage, this was between a 0.1 (10-year) and 0.05 (20-year) AEP event. The flood resulted in further damage to portions of DD 3 and DD 12 site 1. Additionally, the flood resulted in new damaged sites including DD 1 and DD 12 sites 2 and 3 (Appendix A). During the flood, the USACE received assistance requests from two non-federal sponsors and conducted flood fight activities at the DD 3 and DD 12 levees. The USACE response at each levee is summarized below. Areas impacted by construction activities were restricted to the areas of the damaged levees.

DD 1:

During the November 2021 flood event, erosion occurred along 750 LF of the riverward bench slope of the DD 1 levee causing a loss of toe rock. Scour removed large portions of the riprap toe, lower slope, and underlying gravel/spall rock filter (Photographs 1 and 2, Appendix A). In the damaged condition, the levee provides protection from the 99.9 percent AEP (1-year) event. No emergency flood repairs were completed at DD 1.

DD 3:

Between November 11 and 15, 2021, the USACE placed approximately 2,000 tons of Class V riprap along 150 LF of the DD 3 levee riverward slope and toe. This work was completed to prevent a scour hole from threatening the levee's integrity. All riprap was placed in the pre-damage levee footprint previously planned for proposed repair after the flooding in February 2020 (Photographs 5 and 6, Appendix A). The emergency response activities at the DD 3 levee included in-water work and removed or covered vegetation within the project footprint.

DD 12 Site 1:

Between November 27 and 30, 2021, the USACE placed approximately 2,400 tons of Class V riprap along 300 LF of the DD 12 site 1 levee to prevent additional erosion (Photographs 8 and 9, Appendix A). There was no in-water work. All riprap was placed along the riverward bench of the DD 12 site 1 levee above floodwaters and within the footprint of the February 2020 flood fight.

DD 12 Site 2 and 3:

The flood event also resulted in 160 LF of cracking on the riverward bench at DD 12 site 2 and 325 LF of cracking at DD 12 site 3 (Photographs 10 and 11, Appendix A). Cracking of the riverward bench poses slope stability concerns and increases the risk of continued erosion. No emergency flood repairs were completed at DD 12 sites 2 and 3.

Turbidity monitoring was not conducted during the flood fights due to the safety concerns associated with trying to attempt such monitoring and the extremely high background turbidity at the time. It was not feasible to install a cofferdam isolating the river from the levee during the flood. The high water and floating debris created dangerous conditions precluding installation of a cofferdam. The USACE implemented the best management practices (BMPs) described in section 2.5.3 during the November 2021 emergency responses.

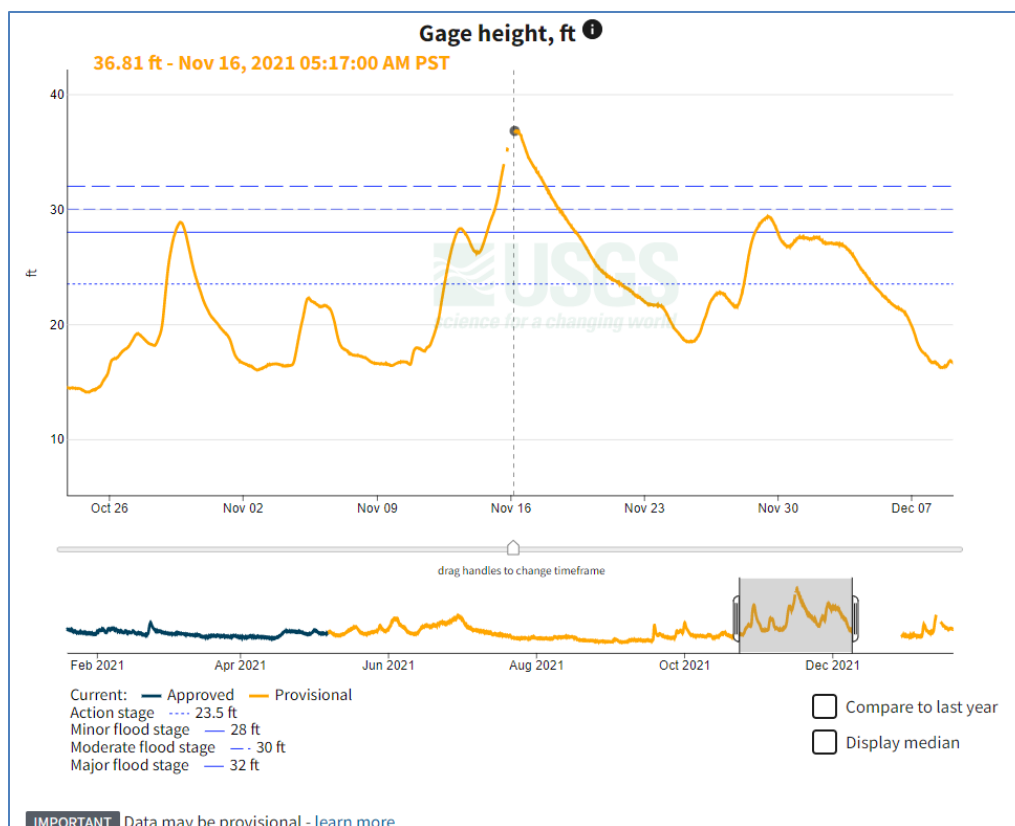


Figure 1. River stage in the Skagit near Mount Vernon, WA USGS gage 12200500.

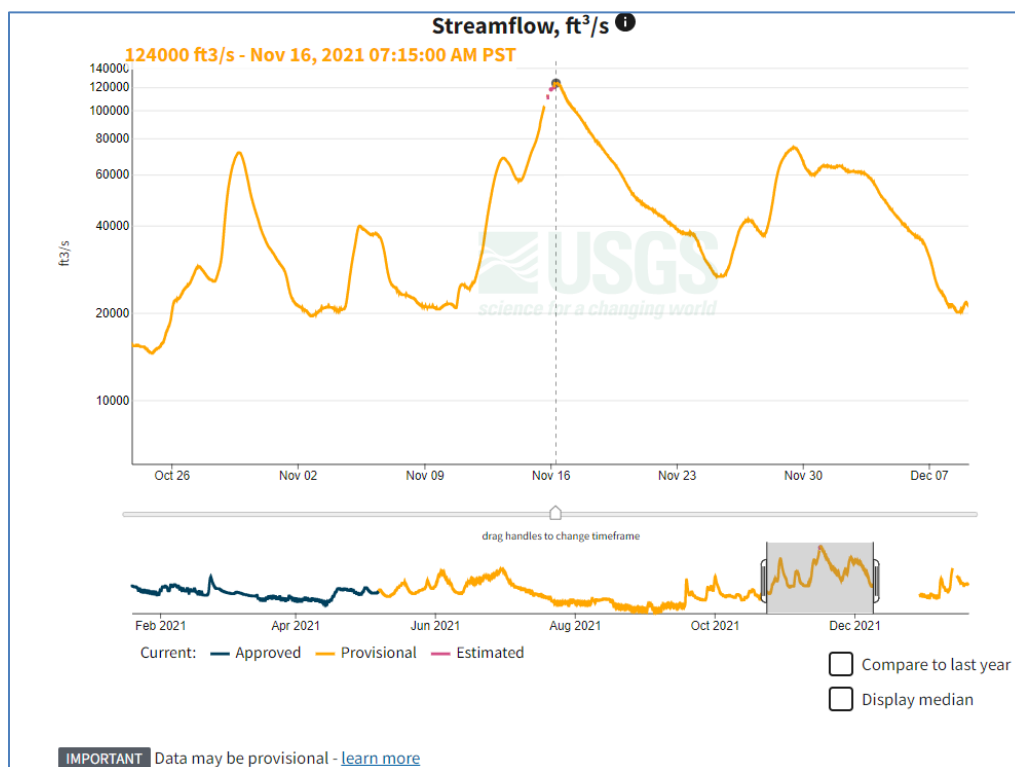


Figure 2. Streamflow in the Skagit near Mount Vernon, WA USGS gate 12200500.

1.2 AUTHORITY

The emergency response and proposed 2023 levee repairs are authorized by Public Law 84-99 (33 U.S.C. Section 701n), the Flood Control and Coastal Emergency Act. The USACE's rehabilitation and restoration work under this authority is limited to the repair of flood control works damaged or destroyed by flood. The statute authorizes rehabilitation to the LOP exhibited by the flood control work prior to the damaging events in 2020 and 2021.

33 U.S.C. 701n provides the USACE the authority for "the repair or restoration of any flood control work threatened or destroyed by flood, including the strengthening, raising, extending, realigning, or other modification thereof as may be necessary in the discretion of the Chief of Engineers for the adequate functioning of the work for flood control and subject to the condition that the Chief of Engineers may include modifications to the structure or project, or in implementation of nonstructural alternatives to the repair or restoration of such flood control work if requested by the non-federal sponsor."

This authority is delegated to Seattle District through 33 CFR, Part 203 and Engineering Regulation (ER) 500-1-1. From ER 500-1-1: "Improvements to design and equipment (e.g., geomembranes) that are a result of state-of-the-art technology, and are commonly incorporated into current designs in accordance with sound engineering principles, are permissible, and are not considered betterments."

In addition, USACE assistance is authorized under 33 CFR 203.32, in support of State and local response activities, to provide temporary assistance to meet an immediate threat to preserve life; residential, commercial, and industrial property; and public facilities and services.

The non-federal sponsor for DD 1 is Skagit County Dike District No. 1. The non-federal sponsor for DD 3 is Skagit County Diking District No. 3. The on-federal sponsor for DD 12 is Skagit County Dike District No. 12.

1.3 PROJECT LOCATION

The Skagit County DD 1 levee is located on the right bank of the Skagit River in between Avon and Mount Vernon, Washington (Figure 3). The DD 1 levee is the middle segment of a 3-segment levee system that includes the DD 9 levee and the DD 12 levee. The DD 1 levee is 8.22 miles long and in its undamaged state provides a 50-year LOP.

The DD 3 main levee is located on the left bank of the Skagit River near Mount Vernon, Washington (Figure 3). It is roughly 43,800 feet long and is the upstream segment of a 3-segment system. In its undamaged state, the levee provides a 50-year LOP to the City of Mount Vernon and surrounding agricultural areas.

The Skagit County DD 12 levee is located on the right bank of the Skagit River near the town of Burlington, Washington (Figure 3). The levee is 6.4 miles long and is the upstream segment of a 3-segment system that protects urban, residential, commercial, agricultural, and public lands. In its undamaged state, it provides a 50-year LOP to the town of Burlington and surrounding areas. Skagit County DD 1, DD 3, and DD 12 are the local non-federal sponsors for the proposed levee repair projects.

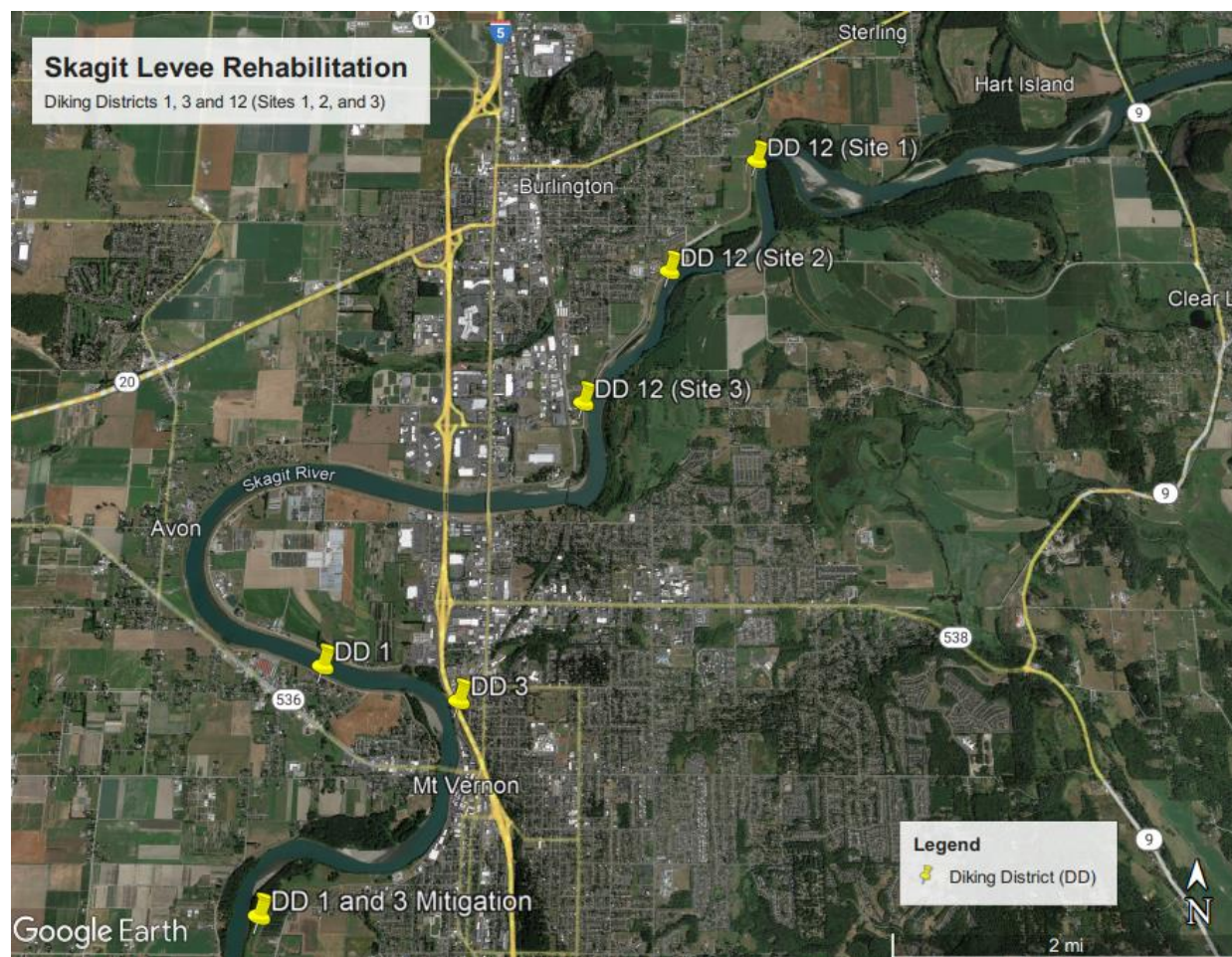


Figure 3. Diking Districts (DD) 1, 3, and 12 (sites 1-3) levee repair sites and mitigation sites for DD 1 and 3.

1.4 PURPOSE AND NEED

This EA addresses two Federal actions. The need for conducting emergency temporary repair activities in February 2020 and November 2021 has been presented in section 1.1.1; the need for implementing a permanent repair has also been presented in section 1.1.1. The purpose of the 2020 and 2021 emergency work was to provide temporary supplemental protection to meet an immediate threat in light of the structure's condition as damaged by 2020 and 2021 flooding, to prevent levee failure. However, even with the addition of armor rock, part of the levee prisms remain compromised and scour protection was not fully restored by the flood fight actions due to high water level. In the damaged condition, the levees presently provide an approximate 1-year LOP. If the levees were to fail, there would be an increased risk to human safety, improved property, and public infrastructure. Repairs would restore adequate and reliable flood protection to the same level provided by the levees prior to the 2020 flood event. An assessment of the levees confirmed that there is an increased likelihood of damages or breaching of the levees in their current condition (USACE 2020a and 2020b). If the levees were to fail, there would be an increased risk to human safety, improved property, and public infrastructure. In the damaged state, the levees each provide a 1-year flood (100 percent AEP) LOP. Combined, if the DD 1, DD 3, and DD 12 levee were to be overtopped or breached, approximately 19,747 people, 8,801 buildings, and \$3.09 billion worth of property are at risk from flooding (USACE 2023). Per Public Law 84-99, the Corps is authorized to repair damaged flood control works to the pre-flood

level of protection. The completed flood fight and the proposed levee repairs addressed in this EA are the result of requests for assistance from the respective non-federal sponsors.

2 PROPOSED ACTION AND ALTERNATIVES

A preliminary evaluation has been conducted on the alternatives for fulfilling the purpose of restoring the levees to their pre-damage LOP. Viable alternatives must restore reliable flood protection to the LOP prior to the damaging event, must be environmentally acceptable, and should address the identified flood risk by being capable of being constructed prior to the next flood season. The preferred alternative must be the least cost alternative that restores the level of protection while fulfilling all legal, technical, and environmental requirements.

Under Public Law 84-99, the USACE has limited discretion over repair alternatives. USACE may deviate from the original design of the non-federal levee (e.g., setback levee) with the participation of the non-federal sponsor who must agree to meet various obligations, including land acquisition and additional cost-share funding, to execute any alternative.

For the proposed levee repairs, four alternatives are being considered as described in the following sections.

2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE

Under this alternative, the levees would remain in their current damaged state. This alternative would not meet the project purpose because the pre-existing level of protection would not be restored and the levees would likely be further damaged in future flood events and could fail, which would endanger human safety and residential, commercial, agricultural, and public lands during future flood events. During any flood event threatening the integrity of the levee system, the USACE or other Federal and non-federal agencies may act under emergency authorities to preserve the levee system and, to the extent possible, maintain protection of safety and property behind the levee. Responding to damages during a flood event, however, would be temporary, less certain of success, potentially more expensive, and could be less protective of environmental and cultural resources. A response would also take time to activate and execute, so there is risk that it would not prevent levee failure, such as overtopping or breaching.

The No Action Alternative is not recommended because it would risk failure of the levee systems and would present unacceptable risk to safety and property. It does not meet the project purpose. While the No Action Alternative is not recommended, it is carried forward for further evaluation to serve as a base condition for evaluation of other alternatives.

2.2 ALTERNATIVE 2: NON-STRUCTURAL ALTERNATIVE

This alternative consists of floodplain management strategies generally involving changes in land use offered by other Federal and State programs. Such strategies would include zoning, easements, flood warning, floodplain evacuation, and flood insurance. Nonstructural strategies also involve acquisition, relocation, elevation, and flood proofing existing structures. A non-structural plan could lessen the environmental impact by restoring parts of the floodplain, enhancing habitat for some species, while still reducing flooding impacts. The cost and logistical time needed to implement this alternative make this option unviable given both the Public Law 84-99 program's requirement to implement repairs with a favorable benefit-to-cost ratio and the emergency need for repair. Furthermore, the non-federal sponsors have not asked to participate in executing a non-structural alternative and must request implementation of a nonstructural alternative per Public Law 84-99 and its implementing regulations. Therefore, this alternative is not carried forward for detailed consideration.

2.3 ALTERNATIVE 3: SET-BACK LEVEE

This alternative would shift the alignment of the levee embankment landward by the necessary distance to avoid or minimize direct contact with the river current. Typically, the setback is a newly constructed earth embankment structure and abandons the existing levee located on the riverbank. In this instance, a setback levee may be more costly than other alternatives due to more extensive embankment material and real estate requirements. Implementing this alternative would also require participation of the non-federal sponsors. While a setback levee would meet the project purpose, the non-federal sponsors have not agreed to meet their obligations, including land acquisition and additional cost-share funding, to execute a setback alternative, which place this alternative outside agency control. Therefore, this alternative is not carried forward for detailed consideration.

2.4 ALTERNATIVE 4: REPAIR IN-PLACE (PREFERRED ALTERNATIVE)

The USACE proposes to construct more permanent repairs to the damaged levees. The proposed repairs would replace the temporary emergency repairs completed during the February 2020 and November 2021 flood fight (section 1.1.1). The proposed repairs would salvage suitable flood fight material for reuse into the final repairs.

This alternative would repair the DD 1, DD 3, and DD 12 (sites 1-3) levees within their pre-damage footprints (Appendix B). However, the proposed repairs to DD 12 (site 1-3) would include a slope lay-back (Appendix B). The DD 12 (site 1 and 2) includes a launchable toe design, which may result in minor changes to the footprint over time. The launchable toe consists of an extra layer of armor rock that is designed to fill potential scour pockets at the toe of the levees.

The levees would be built at specified lengths, slopes, and rip rap class with limited design alterations to the original levee structures (Table 1). The armoring at DD 12, site 1 would be a gradual change in slope from 2H:1V slope to 3H:1 at the upper slopes of the levee. The proposed repair for DD 12 site 2 and site 3 consists of laying back the riverward bench slope to 3H:1V slope armoring. The DD 1 and DD 3 levee slopes will be 1.9H:1V and 1.5H:1V respectively. All levee repairs would provide a 50-year LOP to the cities of Burlington and Mount Vernon and their surrounding agricultural and residential areas. These recommended repairs are necessary to restore it to the pre-damaged LOP. Design plans for the repairs under this alternative are included in Appendix B and described below.

Table 1 represents the length (LF), riprap (cubic yards), filter spalls (cubic yards), slope (horizontal:vertical), topsoil (cubic yards), and hydroseed (spray-on yards) for Diking Districts 1, 3, and 12 (site 1, 2, and 3). The riprap would be backed by quarry spalls with topsoil at all levees. Willow bundles will be placed in the topsoil in two rows at all sites. The hydroseed would be placed along the upper slopes.

Table 1. Design parameters for the proposed levee repair sites

Levee	Site	Length (feet)	Riprap (CY)	Filter Spalls (CY)	Slope (H:V)	Topsoil (CY)	Hydroseed (SY)
DD 1	1	750	5,663	1,482	1.9H:1V	188	2,083
DD 3	1	150	608	454	1.5H:1V	62	146
DD 12	1	800	7,753	1,322	2H:1V to 3H:1V	183	0
	2	435	6,176	947	3H:1V	97	0
	3	300	1,846	481	3H:1V	68	0

2.4.1 Detailed Levee Repair Descriptions

DD 1:

At DD 1, the preferred alternative is the Repair In-Place alternative, which consists of reshaping and armoring the riverward slopes over the damaged lengths. The proposed repair length is 750 LF, which includes 50 feet of tie in repairs on the upstream end of the damage. The downstream end of the project is already tied into the slope from a previous repair. The riverward slope would be reshaped to the greatest extent possible, and a 4-foot blanket of class V riprap underlain by a 1-foot layer of 4- to 8-inch spall rock would be replaced. The armor rock would rest at the angle of repose where the levee slope meets the river bottom, and no buried toe would be constructed. Repairs would restore the levee to its prior 50-year LOP (2 percent AEP).

DD 3:

At DD 3, repairing the levee in-place is preferred to restore the levee to its pre-damaged LOP. Any sloughed material would be removed from the slope and suitable flood fight material would be salvaged for reuse into the final repair. The downstream extent of the repair would incorporate a buried toe with 4 feet of Class III riprap embedded into the foundation. The damaged riverward slope would be re-armored with a 2.5-foot-thick blanket of Class III riprap placed over quarry spalls. The upstream and downstream ends would be smoothly transitioned into the existing slopes. All repairs would occur within the pre-damage footprint as confirmed by historical records of the most recent prior repair to this site. Total rehabilitation construction length is 150 LF, which includes any necessary transitions. Topsoil and hydroseed would be placed in all areas indicated on the plans to restore the project to the existing condition prior to construction.

DD 12 (Sites 1-3):

Repairing the DD 12 levee would restore the levee to its pre-damaged LOP. However, extensive cracking along the riverward bench slope indicates that the toe erosion has destabilized the 2H:1V slope. The damaged slope at DD 12 site 1 would be laid back at a ratio of 3H:1V from the top of the levee to the bench. Below the bench, the slope would be laid back at a ratio of 2H:1V. Sites 2 and 3 would be laid back to a 3H:1V slope, resulting in both increased stabilization and high-water refuge habitat. Any sloughed riprap would be removed from the slope, and suitable riprap placed during the flood would be salvaged for reuse in the final repair. The downstream extent of the repair at DD 12 Sites 1 and 2 would incorporate a launchable toe using 4 feet of Class V riprap. The damaged riverward slope would be re-armored with a 4-foot-thick blanket of Class V riprap placed over a 12-inch layer of quarry spalls, which is an increase in size from the existing Class IV riprap. The existing rock size along the Skagit DD12 levee system is predominantly Class IV rock (sized using the older sizing classes) based on review of all available data. Larger rocks were selected for the repairs based on USACE's hydraulic analysis of the sites. The upstream and downstream ends would be smoothly transitioned into the existing adjacent slopes. All repairs would occur within the pre-damage footprint. Total rehabilitation construction length at DD 12 site 1 is 800 LF, DD 12 site 2 is 425 LF, and DD 12 site 3 is 300 LF, which includes any necessary transitions. Topsoil and hydroseed would be placed in all areas indicated on the plans to restore the project to the pre-flood conditions.

Equipment to be used would be like that employed during previous rehabilitation projects and includes hydraulic excavator, dump truck, and bulldozer. Construction would occur during the June 15 – August 31 in-water work window established by the USACE in coordination with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) when juvenile salmonids are least likely to be in the area. Construction vehicles would access each repair site by existing levee access ramps and the levee crown, which are accessible from public rights-of-way at several locations throughout the length of the project. Excavated

materials would be staged within the levee footprint and at designated staging areas. Repairs to DD 1, DD 3, and DD 12 would occur concurrently and are expected to take approximately 8 weeks. BMPs would be employed to minimize project impacts (section 2.5.3).

2.4.2 Construction Sequence

Construction would occur in a single construction period within the approved construction window and generally consists of the major components described below. Construction refers only to those activities associated with the deconstruction and reconstruction of the levee prism. Specific existing conditions for the location where the fill material would be purchased are unknown, as the materials would be purchased from local, privately owned companies. The site would be chosen through a contract bidding process prior to construction. However, any borrow site, quarry, or gravel mine would be fully permitted by the state.

Site Preparation: The first component of construction includes the preparation of access routes and the existing levee prisms for material removal. A pre-construction meeting would be held. The project limits would be clearly marked using stakes and flagging, and the repair area cleared and grubbed as necessary. Invasive vegetation, including Japanese knotweed and Himalayan blackberry, would be disposed of off-site in a manner to prevent the spread of invasive vegetation. Staging activities would consist of temporarily stockpiling rock, supplies, equipment, and vehicles. Staging, storage, and work activities would be limited to the areas shown in the design plans (Appendix B).

Deconstruct Damaged Levee: The damaged portion of the levee would be deconstructed by removing, salvaging, and stockpiling remnant riprap and other existing material as practicable. As necessary, sloughed embankment material would be excavated from the scoured riverward slope. Salvaged and stockpiled materials would be stored in approved areas for reuse in the repair or disposed of at a permitted disposal site. All deconstruction of the damaged levee would follow design plans.

Construct Levee Repair: Construction would commence at the toe, starting upstream and working downstream, to deflect flows and minimize turbidity in the construction area. The construction would adhere to the design plans (Appendix B). The weighted toe, levee prism, and slope would be constructed per design requirements. The repair would smoothly transition at the upstream and downstream limits of construction into the adjacent slopes.

Complete Construction: Upon completion of all construction activities, areas disturbed by levee construction, staging activities, and road access would be restored to pre-construction condition as necessary. The non-federal sponsors and the USACE would complete mitigation as described below.

2.5 CONSERVATION, BEST MANAGEMENT PRACTICES, AND MITIGATION

Mitigation for effects of proposed actions is evaluated as part of the NEPA process. Mitigation can take any of the following forms:

- Avoiding effects altogether by not taking a certain action or parts of an action.
- Minimizing effects by limiting the degree or magnitude of the action and its implementation.
- Rectifying effects by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating effects over time by preservation and maintenance actions during the life of the action.
- Compensating for effects by replacing or providing substitute resources or environments.

The preferred alternative is planned and designed to avoid and minimize project impacts to the maximum extent feasible. All access would be over existing roads and trails, and all staging would be in previously developed or disturbed uplands. All in-water activity would be timed to use work windows established to protect fish (June 15 through August 31). Conservation Measures and BMPs listed below include measures to protect the Skagit River from sediment and turbidity originating from the site.

2.5.1 Conservation Measures

Section 7(a)(1) of the Endangered Species Act (ESA) directs Federal agencies to use their authorities to further aid the purpose of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. To minimize the impacts of incidental take, and to be exempt from the take prohibitions of section 9 of the ESA, the Corps also will minimize project impacts on ESA-listed fish species. For the preferred alternative, the USACE developed a list of conservation measures and incorporated these into the project design to reduce environmental impacts of the project to endangered and threatened listed species and designated critical habitat. For the preferred alternative, the measures are the following:

- a. In-water work will be limited to the in-water work window (June 15 - August 31) for avoidance of fish
- b. Willow plantings – The repaired levee will incorporate either willow bundles or willow lifts throughout the length of the repairs as described in section 2.5.2 and design plans (Appendix B). The Corps will monitor riparian plantings. See section 2.5.2 for details.
- c. All disturbed soils will be covered with topsoil and hydroseeded with the Meadow Seed Mix specified in the Stormwater Management Manual for Western Washington, BMP C120, Table II-3.4: Temporary and Permanent Seed Mixes, which includes *Agrostis alba* or *A. oregonensis* 20 percent by weight, *Festuca rubra* 70 percent by weight, and *Trifolium repens* 10 percent by weight.
- d. Follow-up post-construction review of conservation measures. The repair site will be examined after the repair is completed. If conservation measures and repairs are different from described here or what is depicted in the plans, they will be recorded and described, and consultation reinitiated as necessary.
- e. Place unanchored complex woody material along the repair sites at DD 1 and DD 12 and 17 anchored rootwads at a location downstream of the DD 3 repair site, as detailed in 2.5.2.
- f. Implement a 3:1 slope layback at DD 12 as detailed in 2.5.2.

2.5.2 Environmental Mitigation Measures

All environmental mitigation discussed in this section applies to execution of the preferred alternative.

Because of the long history of modification of riverbanks within the lower Skagit valley, the edge habitat is quite degraded, yet the Skagit River remains critical for threatened salmonids. Due to the extent of repairs to the Skagit River levees and the time lag for repaired sites to provide edge habitat functions, the USACE is proposing measures to mitigate for lost function of the riverine edge habitat and to avoid further impacting salmon recovery.

These mitigation features will be incorporated into all repair sites:

- Placement of topsoil and hydroseed along upper slope along the full repair length. Soil and hydroseed reduces the heating effect of the compacted levee material on the upper levee slope, increases the chance of natural recruitment of plants, and creates limited habitat for insects along the bank.

- Two rows of either willow bundles or willow lifts will be placed along the length of the levee repair. Willows create shade, insect habitat, and edge diversity, and as they mature the stems create refugia for salmon during high-water events. Multiple lifts have the added benefits of increased refugia across a wide range of water levels and increasing recruitment capability should there be damage to any plantings.
 - If willow lifts are installed, the first row will start at ordinary high water with willows spaced every 12 inches along the full repair and the second row will start approximately 3 feet above the first lift.
 - If willow bundles are installed, the first row will start at ordinary high water with willow bundles spaced every 6 feet along the full repair and the second will start approximately 3 feet above the first row.
 - Willow bundles consist of six 4-foot-long, half- to one-and-a-half-inch diameter willow stakes.

The Corps will submit a report to the USFWS and NMFS detailing the first year of monitoring by December 31, 2024 documenting survival of riparian plantings at or above 80 percent. If, after the first year less than 80 percent of plantings survive, replant, monitor, and report survival the second year to the Services by December 31, 2025. Report survival by December 31, 2026 for the final result.

Monitoring and adaptive management, including replacement and maintenance, after the first year will be conducted by the Corps. If after the first year less than 80 percent of the each of the willow plantings survive, all the dead plantings would be replaced. In preparation for any required adaptive management re-plantings, the Corps will evaluate why the plantings failed and plan the best path forward for successful replacement. The Corps will engage with the non-federal sponsors to assist in identifying the problem and alternative planting practices for successful replanting. These may include planting different species, changing the planting location, or adding pest control or exclusion devices. If replacement occurs, the plantings will be monitored for an additional year by the Corps. The Corps would report the success of the mitigation plantings to the resource agencies with which it coordinated for the repair. The plantings will be evaluated in September of each monitoring year, as described above, before leaf drop.

The following information will be provided in a monitoring report to the Services by December 1, 2024 and constitutes the maintenance, monitoring and adaptive management plan:

1. Project identification:
 - a. Project name
 - b. Corps point of contact
2. Construction details
 - a. Starting and ending dates for work completed for construction
 - b. Total area (square feet) of in-water construction footprint
 - c. Total area (square feet) of riparian disturbance (i.e., water-ward face of the levee)
 - d. Results of turbidity monitoring
 - e. A description of any elements of the project that were constructed differently from those depicted in the Biological Assessment (BA), associated addendums, and communications.

- f. Willow survival of 80 percent, based on how many willows of the total installed survive, at the end of the first growing season, and if necessary, remedial measures planned or undertaken to replace dead plants. Each repair site would be evaluated separately.
3. If replanting is required due to less than 80 percent survival, submit an additional monitoring report of the survival of all plantings following one growing season after re-planting.

DD 1 and DD 12:

- Unanchored complex woody material will be placed along the repair site above the ordinary high water mark. The material is not expected to remain in place during a high-water event but would shift and remain available to create habitat downstream. The woody material is intended to enter the river naturally during high river flows and create a gain in habitat and hydraulic complexity.

DD 1 and 3:

- Placement of 17 anchored rootwads at a location downstream of the DD 3 repair site at river mile (RM) 10. Rootwads will be anchored using boulders and placed via excavator from the bank. See Appendix B for location, configuration, and design details. The DD 1 repairs includes 8 anchored rootwads and the DD 3 repairs includes 9 anchored rootwads. Rootwads create long-lasting aquatic habitat complexity and begin to function immediately after placement.

DD 12 (Sites 1-3):

- A slope layback to create a 3H:1V slope along all DD 12 repair segments. This will create a shallower riverward slope with a more stable bank that is expected to require fewer repairs and creates a larger area of shallower depths of water for a given length of shoreline, as preferred by juvenile salmon. It increases river conveyance and may decrease river velocities along the bank.
- As part of the repair, the 3:1 slope layback will be tied into the back of an existing off-channel fish cove, which would preserve its function, allow the fish access to the cove earlier in high-flow events, and retain the existing riparian vegetation.

2.5.3 Best Management Practices (BMPs)

The USACE developed a list of BMPs and will incorporate these into the action to reduce environmental impacts. Some are integrated into the repair, while others are guides to operation and care of equipment. These measures are as follows:

- 1) A pre-construction meeting will be conducted to verify existing conditions and finalize BMPs and environmental requirements. Other pre-construction meetings can include outside resources agencies like USFWS or NMFS.
- 2) Work will be conducted during daylight hours to minimize impacts to the surrounding community.
- 3) Work will be conducted during a period of low flow.
- 4) Refueling will occur on the backside of the levee. Refueling shall be offset at least 100 feet from the waterline.
- 5) At least one fuel spill kit with absorbent pads will always be onsite.
- 6) All work done in the water is scheduled to occur during the in-water work window (June 15 to August 31).

- 7) At least one USACE biologist and geotechnical engineer will be available via phone during construction. USACE biologists may visit the construction site and provide periodic updates to the Services on construction including an onsite visit with staff. USACE biologists may schedule a visit to construction sites with the Services. The geotechnical engineer may also visit the construction site. All visits will be coordinated with the Project Manager and Construction Manager.
- 8) Vegetation removal will be limited to the repair sites.
- 9) Should any complex woody material be generated or found on site during repairs, it shall be salvaged and placed along the shoreline above the ordinary high water line. This includes any tree trunks, rootwads, and large shrubs. The complex woody material may be placed after a section of levee is completed or after the entire repair. Depending on the water height, the material may be placed above or below the willow stakes. Rootwads will be oriented upstream (into the flow).
- 10) Temporary erosion control measures will be installed for all phases of work as required to prevent the discharge of accumulation of sediment into the river, adjacent swales, catch basins, storm drains, or off-site. A certified Erosion and Sediment Control Lead will choose and install erosion control materials for specific site conditions as necessary. These may include silt fencing, mats, blankets, check dams, bonded fiber matrix, and straw. Accumulation of sediment in any adjacent swales or storm drains will be monitored daily and cleared to ensure continued service throughout construction.
- 11) Noxious weeds will be disposed of separately from other organic materials at an approved off-site location.
- 12) All construction materials will be free of contaminants such as oils and excessive sediment.
- 13) Equipment used near the water will be cleaned prior to construction.
- 14) Construction equipment shall be regularly checked for drips or leaks. Any leak will be fixed promptly, or the equipment would be removed from the project site.
- 15) Drive trains of equipment will not operate in moving water, and work will occur from the top of the bank. Only the excavator bucket with thumb attachment will extend into the water.
- 16) Biodegradable hydraulic fluids will be used in machinery where appropriate.
- 17) Project limits shall be flagged with a USACE biologist present prior to commencement of construction to avoid disturbance to adjacent habitat or sensitive areas.
- 18) During the construction period, all plantings (willows, shrubs, and trees) will be watered at the time of installation as needed.
- 19) Rock placement will occur only within the project footprint.
- 20) Rocks will be individually placed. No end dumping of rocks will occur.
- 21) Rock placement and underwater excavation will occur from the upstream end of the project to the downstream end. Rock is placed shortly after excavation so it will act as a localized flow deflector and help manage flows in the installation areas.
- 22) Remove all trash and unauthorized fill in the project and staging area, including concrete blocks or pieces, bricks, asphalt, metal, treated wood, glass, floating debris, and paper and dispose of properly after work is completed.
- 23) Water quality monitoring for turbidity will be performed as outlined in the Water Quality Monitoring Plan. If a potential exceedance is detected at the early warning sample locations, on-site personnel will evaluate construction activities and take measures to minimize turbidity generation. Examples include slowing down a specific in-water activity and changing the amount of material that is moved below the waterline.
- 24) Stormwater Pollution Prevention Plan will be followed along with corresponding BMPs included in said plan.

- 25) All disturbed soils will be covered with topsoil and hydroseeded with the Meadow Seed Mix specified in the Stormwater Management Manual for Western Washington, BMP C120, Table II-3.4: Temporary and Permanent Seed Mixes which includes *Agrostis alba* or *A. oregonensis* 20 percent by weight, *Festuca rubra* 70 percent by weight, and *Trifolium repens* 10 percent by weight.

In addition, a Fueling and Spill Recovery Plan will be developed prior to construction that will include specific BMPs to prevent any spills and to prepare and react quickly should an incident occur. A water quality monitoring plan has been developed for this effort and turbidity monitoring will be conducted in accordance with this plan (Appendix C). Should construction efforts exceed the state turbidity standards, or a visible turbidity plume is observed, work will be halted, and construction methods adjusted to ensure that further exceedances will not occur.

3 ENVIRONMENTAL RESOURCES OF CONCERN AND EFFECTS

3.1 LAND USE, UTILITIES, AND INFRASTRUCTURE

3.1.1 Existing Conditions Pre-Flood (2020)

Land uses in the vicinity of the levees are a mix of residential, commercial, and agricultural. The levees provide protection for residences, agricultural and commercial properties, state and local roads, and associated public infrastructure. Roads are located directly behind the levee. Power lines and phone lines are strung along those roads either at the landward base of the levee or, more commonly, across the road from the levee. The cities of Mount Vernon and Burlington are located adjacent to the proposed repair sites. Land use outside the city limits is largely agricultural and rural residential. Behind the DD 12 levee is the Burlington sewage treatment plant. Several highways and bridges are in the area, including Interstate 5 and the West Division St. Bridge, and a railroad. There are also playgrounds, picnic tables, and pavilions at the nearby park. This green space is used for sports and walking and is a dog friendly area.

3.1.2 No Action

Implementation of the No Action alternative would not be expected to result in any land use changes. Under the No Action alternative, the levees would not be repaired, and if flooding occurs due to breaches in weak sections of the levee, public infrastructure could be damaged or lost and local area traffic could be affected. This could affect commercial traffic, access to private residences, evacuations, and emergency response services. Depending on the severity of flooding, emergency flood fight efforts may occur to protect lives and property. Emergency flood fight efforts would likely be needed to protect human safety and property during a flood event. These activities and local efforts to maintain the levees are expected to be sufficient to maintain existing land use and zoning within the floodplain behind the levee. Effects on land use, utilities, and infrastructure would be negligible.

3.1.3 Flood Fight Activities (February 2020 and November 2021)

During the February 2020 and November 2021 flood fight activities, landowners and businesses surrounding the project area may have been disrupted while equipment and personnel accessed the construction area via land easements. The non-federal sponsors began construction of an access road to reach the damaged section, using quarry spalls and geofabric. The flood fight activities protected residences, commercial properties, roads, and other infrastructure from flood damages. After the flood and flood fights the levee remained damaged

and provides protection from floods up to a one-year LOP. Effects to land use, utilities, and infrastructure from the flood fight activities were negligible.

3.1.4 Repair In-Place Alternative

With the proposed 2023 repair, effects to land uses are expected to be the same as discussed above in section 3.1.3 and only temporary in nature. Overall, there would be minor and temporary impacts to land use, utilities, and infrastructure. Land use in the project area would not change but may be disrupted temporarily from construction activities and equipment. Before work is started, a utility locate would be completed to verify the presence and absence of utilities in the construction footprints. Construction-related traffic may cause temporary increases to, and disruption of, local traffic. Flaggers and signs would be used, as needed, to direct traffic safely around the construction site. Existing infrastructure would not be altered to prevent its intended purpose and use. Damaged utilities and infrastructure would be replaced or repaired as necessary. Effects to land use, utilities, and infrastructure would be negligible.

3.2 WATER RESOURCES AND WATER QUALITY

3.2.1 Existing Conditions Pre-Flood (2020)

The Skagit River is designated for aquatic life uses as core summer salmonid habitat (WAC 173-201A-602). The core summer habitat designation is characterized by the river's use from June 15 to September 15 as either salmonid spawning or emergence, adult holding, use as important summer rearing habitat by one or more salmonids, or as foraging habitat by adult and sub-adult native char. Other common characteristic aquatic life uses for waters in this category include spawning outside of the summer season, rearing, and migration by salmonids. In general, the upper reaches of the Skagit meet state water quality standards. Most of the substandard water quality conditions occur in tributaries to the Skagit River and in the Samish Basin, while the Skagit River itself meets standards on most occasions (Skagit County 2008). Water quality standards (e.g., temperature, dissolved oxygen, and turbidity) are established based on this aquatic life use designation. In addition, the Skagit River is designated for primary contact recreational uses, all water supply uses, and all miscellaneous uses.

3.2.2 No Action

Under this alternative, the damaged levees could sustain further damage, which may lead to flood fighting measures and fill placement during future high-water events. This would increase sediment and turbidity in the river, which may be a minor concern during a flood event. Levee failure, if flood fighting efforts were unsuccessful, could allow floodwater to transport debris, sediment, and pollutants back into the river from adjacent properties with substantial impacts to water quality and potential for sediment contamination. Adjacent areas include industrial, recreational, agricultural, and residential properties.

3.2.3 Flood Fight Activities (February 2020 and November 2021)

Turbidity monitoring was not conducted during the flood fight activities due to the extremely high background turbidity and safety concerns including high water and floating debris. The BMPs described in section 2.5.3 were implemented to minimize and avoid water quality impacts. Removal of vegetation for flood-fighting purposes reduced shading to the river. This likely resulted in a localized increase in water temperatures. Effects on water resources and water quality were negligible.

3.2.4 Repair In-Place Alternative

Under this alternative, the DD 1, DD 3, and DD 12 levees would be repaired. All riverward repairs would occur within the pre-damage levee footprint. Doing so would require work in the

active channel with some work below the ordinary high water mark. Construction would be expected to cause minor, temporary, and localized increases in turbidity. BMPs, including restrictions on fueling and prevention of fluid leaks from construction equipment, would be employed to minimize and prevent discharge of pollutants into the river. Materials used for the repair would be clean and contaminant free and purchased through a contract bidding process from vendors fully permitted by the state. Turbidity would be monitored upstream and downstream of the project sites during construction (Appendix C). If turbidity exceeds state water quality standards, USACE would modify or stop particulate-generating activities and commence contingency sampling requirements as outlined in the water quality monitoring plan (Appendix C).

This alternative would remove whatever remaining vegetation is present in the repair sites (see section 2.4.1) and replace it with rock armor, reducing shade and increasing localized water temperatures along the shoreline. The effect to water temperature would be mitigated by on-site willow plantings incorporated into the repaired levee slopes and placement of hydroseed. Shading from the willow bundles would increase over time. The anchored rootwads would also provide localized shade. This alternative would not have measurable effects to pH, bacteria, and dissolved oxygen levels in the river. Only clean, uncontaminated materials would be used, and no pollutants are expected to be introduced to the river. Effects to water quality from this alternative would be temporary and localized.

3.3 VEGETATION AND WETLANDS

3.3.1 Existing Conditions Pre-Flood (2020)

Wetlands: No wetlands are located within or immediately adjacent to the project areas (DD 1, DD 3, and DD 12). Access roads and staging areas are not located in jurisdictional wetlands.

Vegetation: The lower Skagit River levees are highly managed to maintain levee safety standards and inspect ability. Most of the trees in the project area are small to medium size and tend to be one of three species: black cottonwood (*Populus trichocarpa*), willow (*Salix* spp.), and red alder (*Alnus rubra*). Non-native species are prevalent on the levees through the lower Skagit River. Species such as Himalayan blackberry (*Rubus armeniacus*), reed canary grass (*Phalaris arundinacea*), Scotch broom (*Cytisus scoparius*), Japanese knotweed (*Polygonum cuspidatum*), and butterfly bush (*Buddleja davidii*) are common. Other plants found in the project area are salal (*Gaultheria shallon*) and yarrow (*Achillea millefolium*).

Prior to the flood, the DD 1 Levee was a well-maintained grassed levee and mid-bench with a narrow, developed canopy consisting of approximately 50 alders and 50 willows with native shrub and herbaceous vegetation consisting of snowberry and Nootka rose. Invasive shrub and herbaceous vegetation include Himalayan blackberry, reed canary grass, and Japanese knotweed. The total vegetated area (excluding sod-only areas) is approximately 0.40 acre.

Levees within DD 3 are typically well maintained with a grassy surface that is mowed regularly along the crown and side slopes. Along the Skagit mainstem, most of the levee in this district is setback from the river; however, along the South Fork of the Skagit River and along Tom Moore Slough, the levee generally follows the river's edge with only a few riverward vegetated benches. Typically, DD 3 does not maintain its revetments as extensively as other urban Skagit districts, such that vegetation along the revetment grows in wider tracts with larger trees. At the repair site, the levee crown, back slope, and riverward slope are maintained as grassy surfaces or covered in Himalayan blackberry. Any vegetation is found in a narrow band along the revetment face.

At the DD 12 levee repair site, large trees have deposited on the lower levee bench at the bend in past floods and large wood often collides with the levee in this reach. Levees within this district are well maintained with a grassy surface that is mowed regularly along the crown and side slopes. Levees within DD 12 typically follow the river's edge with narrow grassy benches (less than 75 feet wide). At the DD 12 levee repair site, the levee crown, backslope, and riverward slope are maintained as grassy surfaces. Any shrubby vegetation is in a narrow band along the revetment face and mostly consists of willows.

3.3.2 No Action

Depending upon the magnitude and duration of future flood events, the DD 1, DD 3, and DD 12 levees may start to fail. Under these circumstances, a flood fight would likely be conducted to try to save the levees and protect properties, facilities, and lives from flooding. Construction during a flood event is difficult and is completed as quickly as possible; therefore, vegetation would be removed or buried as needed to accomplish the levee rescue under difficult construction conditions, regardless of the type of vegetation. Levees typically are not revegetated following the flood fight actions due to the rapid nature of construction and high-water levels. If a flood fight was unsuccessful and the levee failed, inundation and possible channel migration could alter vegetation communities or erode vegetation from the affected areas.

3.3.3 Flood Fight Activities (February 2020 and November 2021)

The flood fight activities required the removal or covering of shrubs and grasses within the work footprint. The February 2020 flood fight activities at DD 12 site 1 resulted in the removal of approximately 60 willows spaced on approximately 5-foot centers. The November 2021 flood fight activities at the DD 3 levee resulted in covering or removal of mostly Himalayan blackberry. See Appendix A for images of the site before and during the flood fight.

3.3.4 Repair In-Place Alternative

Under this alternative, some shrub vegetation in the repair footprints may be removed as necessary to complete repairs. The USACE does not anticipate the need to remove any trees to complete the repairs. A vast majority of the vegetation has already been removed by the flood fight activities in 2020 and 2021 (Appendix A).

Riparian vegetation is important for recruitment of complex woody material in the river, shading, cover, complexity of shoreline, nutrient input, and as perching and nesting habitat for birds. As levee vegetation is highly managed, the proposed repair locations provide very limited riparian function. Establishment of herbaceous vegetation (willow lifts) at the repair sites would offset the impacted functions. Natural recruitment of woody species is expected to occur slowly due to levee vegetation management by the non-federal sponsor as part of their operation and maintenance responsibilities. A minor reduction in habitat function is expected due to construction activities. Establishment of herbaceous vegetation would limit rock exposure to the sun (to limit associated water temperature impacts) and would provide some nutrient input to the river. Mitigation activities (namely creation of the slope layback segment and plantings) would offset impacts to riparian functions (e.g., shoreline complexity, woody debris recruitment, and nutrient input).

Overall, the effect of the Repair In-Place Alternative on vegetation would be negligible given the limited vegetation present and the mitigation plantings proposed.

3.4 THREATENED AND ENDANGERED SPECIES

3.4.1 Existing Conditions Pre-Flood (2020)

3.4.1.1 Chinook

Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*) was listed as threatened on March 24, 1999 and revised on June 28, 2005 (NMFS 1999; NMFS 2005a). Critical habitat was designated for Puget Sound Chinook salmon in 2005 and includes the Skagit River in the project area (NMFS 2005b).

Chinook salmon are most often found in large streams or rivers, and many stocks spawn far inland. Chinook salmon are considered main channel spawners, although they do use smaller channels and streams with sufficient flow. Due to their large size, Chinook salmon can spawn in larger substrate (up to 14 cm or about 5.5 inches) than most other salmon species (Anchor Environmental, L.L.C. 2003).

The WDFW Priority and Habitats and Species List database (2018a) identifies six stocks of Chinook in the Skagit River: 1) Upper Sauk (run: Spring, status: depressed), 2) Suiattle (run: Spring, status: healthy), 3) Cascade (run: Spring, status: depressed), 4) Upper Skagit (run: Summer, status: depressed), 5) Lower Skagit (run: Fall, status: depressed), and 6) Lower Sauk (run: Summer, status: depressed). Summer-run Chinook salmon are supplemented by hatchery releases upstream of the action area. The Skagit River has four life history strategies for wild Chinook. There are three ocean-type strategies: 1) Fry migrants, which migrate quickly to Skagit Bay after emergence, 2) Delta rearing migrants, which migrate quickly downstream after emerging, but rear in the estuary for several weeks to months, and 3) parr migrants, which rear for a couple of months in freshwater before moving through the estuary. The fourth life history strategy is the stream-type Chinook, or yearlings, which rear in freshwater for over 1 year. Spring runs of Chinook tend to have a higher proportion of stream-type Chinook, roughly 50 percent (SRSC and WDFW 2005). A study by Beamer et al. (2010) showed that the majority of juvenile Chinook rearing in freshwater portions of the Skagit River prefer pool, glide, and bank habitat. Smolt trap data in the mainstem of the lower Skagit River suggests that ocean-type populations dominate the juvenile out-migration (Seiler et al. 1995, Myers et al. 1998); however, stream-type Chinook are present as well.

Juvenile outmigration occurs from March through late July. Adult upstream migration occurs from February through July for spring and summer Chinook and July through November for fall Chinook (WDFW 2007). All Skagit River populations of Chinook transit the action area during migration. All the stocks could be present as upstream migrating adults during the specified window for in-stream construction (June 15 to August 31). Outmigrating juveniles could be present during the months of June and July. Stream-type juveniles could be present during the entire work window, albeit in low numbers.

The lower Skagit mainstem/tributaries Chinook stock spawning takes place in the mainstem Skagit River and tributaries downstream from the Sauk River typically in October (SRSC2005). The spawning area identified by WDFW includes the river adjacent to the proposed repair site at the DD 12 levee (WDFW 2018b). All other populations of Skagit River Chinook spawn further upstream in the Skagit River and its tributaries.

3.4.1.2 Steelhead

The Puget Sound Steelhead (*Oncorhynchus mykiss*) distinct population segment was listed in 2007 (NMFS 2007a). Critical habitat for steelhead was designated in 2016 and includes the Skagit River in the project area (NMFS 2016).

Steelhead exhibit considerable diversity in age at smoltification, age at return or maturation, and spawning timing. Steelhead can also be repeat spawners (iteroparity). They generally reside longer in freshwater than salmon species (commonly 1 to 4 years) and use diverse tributary habitats with cool, clean water. Channel features such as side channels, adjacent small tributaries and floodplains, and abundant complex woody material and coarse substrate (boulders and cobble) provide important habitat for juvenile steelhead, including as cover from predators and as refuge from fall and winter floods (NMFS 2019).

Skagit River steelhead include a winter and summer run. The project area is a migration corridor for upstream migrating adults and downstream movement of juveniles migrating to saltwater environments. Winter run steelhead enter the Skagit River as adults from November through April. Summer run steelhead return to freshwater from May to October (NMFS 2007a and WDFW 2007). The spawning area of the mainstem population extends from roughly one mile upstream of the I-5 Bridge (river mile 22.5) to the lower headwaters of the Skagit Basin (WDFW 2002). All other populations spawn in the headwaters of the river. Spawning typically occurs from March through June but can be as early as January (NMFS 2007a and WDFW 2007). The DD 12 levee repair site is adjacent to the spawning reach of the mainstem population. Post-spawn adults exit the river from April through June. Summer steelhead reside for extended periods in deep pools (PSSTRT 2013). Most Skagit River steelhead migrate to the ocean after 2 years, with some doing so after 1 or 3 years (NMFS 2005c). Outmigration typically occurs from April to mid-May (NMFS 2007a), although in the Skagit River system it has been shown to extend from March to August (WDFW 2007).

Juvenile steelhead may be present year-round since spawning areas are close in proximity and the juveniles spend multiple years in freshwater before migrating. Multiple age classes of juveniles may be present in the vicinity including fry and yearlings. Working during the in-water work window avoids the spawning period for steelhead; however, adult migrant and juvenile steelhead may be present in the project area during the construction.

3.4.1.3 Bull Trout

The Coastal-Puget Sound bull trout (*Salvelinus confluentus*) distinct population segment was listed as threatened on November 1, 1999 and is thought to contain the only anadromous form of bull trout in the coterminous U.S. (USFWS 1999). Critical habitat was originally designated for bull trout in 2005 and revised in 2010 and includes the Skagit River in the project area (USFWS 2010).

Bull trout prefer cold streams, but are occasionally found in larger, warmer river systems and may use certain streams and rivers in the fall and winter when water temperatures seasonally drop. Because bull trout inhabit side channels and the margins of streams, they are highly sensitive to flow patterns and channel structure. They need complex forms of cover such as complex woody material, undercut banks, boulders, and pools to protect them from predators and to provide prey. Unlike other salmonids such as Chinook salmon, bull trout survive to spawn year after year. Since many populations of bull trout migrate from their natal tributary streams to larger water bodies such as rivers, lakes and saltwater, bull trout require two-way passage for repeated spawning as well as foraging.

Bull trout express both resident and migratory life history strategies (Rieman and McIntyre 1993). Resident forms complete their entire life cycle in the tributary or nearby streams in which they spawn and rear. Migratory bull trout spawn in tributary streams, where juvenile fish rear before migrating to either a lake (adfluvial form; Downs et al. 2006), river (fluvial form; Fraley and Shepard 1989), or saltwater in certain coastal areas (amphidromous; Brenkman and Corbett 2005). Juvenile bull trout from fluvial populations spend 1 to 4 years in their natal streams and then migrate to larger streams or rivers (Goetz et al. 2004; Goetz 2016).

Bull trout in the Skagit Basin are known to migrate up to 121 miles between Puget Sound and headwater spawning grounds (USFWS 2004). Based on monitoring in the Skagit Basin, anadromous bull trout sub-adults (fish that are not sexually mature) first migrate to the estuary at the mouth of the Skagit River in April through June, then re-enter the river June through August. Most adult fish enter the estuary from February through May and return to the river from May through July. The anadromous and fluvial fish ascend the river to upstream spawning grounds beginning in May and continuing into July with a few migrants in August. The upstream movement of fish occurs as temperatures exceed 60-64 °F (Rieman and Chandler 1999). Sub-adults move between the estuary and the lower Skagit River throughout the year at similar times to the adults (Goetz 2016). The key spawning and early rearing habitat are found in the upper portion of the Skagit River basin outside of the project area (USFWS 2004, USFWS 2015).

Spawning occurs from late August to early or mid-November but is more typically seen between the first week in October and the first week in November when water temperature drops between 46.4 °F and 48.2 °F (WDFW 1998). After the fall rains, sub-adult and adult bull trout migrate downstream to the lower river to overwinter, with a small number migrating into Puget Sound.

3.4.1.4 Southern Resident Killer Whale

Southern Resident Killer Whales (*Orcinus orca*, SRKWs) were listed as endangered on February 16, 2006 (NMFS 2005d). Their customary range is thought to be primarily within Puget Sound, and through and within the Georgia and Johnstone Straits. SRKWs occasionally migrate as far south as Monterey Bay, California and as far north as northern Haida Gwaii (formerly named the Queen Charlotte Islands) in Canada (Krahn et al. 2004). Critical habitat was originally designated for the SRKW in 2005 (NMFS 2006) and revised in 2021 (NMFS 2021). The action area is not designated as SRKW critical habitat, but critical habitat is designated in the Puget Sound.

SRKWs are large mammals requiring abundant food sources to sustain metabolic processes throughout the year. Prey availability changes seasonally, and SRKWs appear to depend on different prey species and habitats throughout the year. The seasonal timing of salmon returns to southern Puget Sound River systems likely influences the movements of SRKWs out of core summer areas. Whales may travel significant distances to locate prey aggregations sufficient to support their numbers (NMFS 2006). SRKWs spend large amounts of time in “core” inland marine waters coinciding with congregations of migratory salmon returning from the Pacific Ocean to spawn in U.S. and Canadian Rivers (NMFS 2006). The topographic and oceanographic features in these core areas include channels and shorelines that congregate prey and assist with foraging. Their core range during the spring, summer, and fall includes the inland waterways of Puget Sound, Strait of Juan de Fuca, and Southern Georgia Strait. Little is known about the winter movements and range of the SRKWs (NMFS 2005d); however, recent observations revealed Columbia River Chinook stocks provide a majority of the SRKW winter diet indicating they are off the coast of Washington during winter (Hanson et al. 2021).

SRKWs do not use the Skagit River and even though SRKWs do not directly occupy the shallow waters of the river, they show a strong preference for Chinook salmon (primarily Fraser River Chinook salmon), with chum salmon as the second-most preferred (NMFS 2008). The survival of these whales has been shown to positively correlate with Chinook salmon abundance (Ford et al. 2010). Seventy-two percent of the 396 salmon taken by killer whales sampled from 1974 to 2004 were Chinook, despite the much higher abundance of the other species (Ford et al. 2005). SRKWs likely include Chinook salmon from the Skagit River basin in their diet.

3.4.2 No Action

The No Action Alternative could result in continued erosion of the bank, especially in a flood event, and could leave the levee vulnerable to continued damage and breaching. A breach would result in inundation behind the levee with associated turbidity and potential pollution impacts to the river. A flood fight would likely be undertaken to prevent a breach and could require in-water work that could affect Chinook, steelhead, and bull trout. Emergency actions would entail more in-water work and could have greater impact on aquatic dependent ESA-listed species habitat than a scheduled repair action. Flood fight actions that remove vegetation and disturb the river would have negative impacts, the severity of which is determined by timing, location, and extent which cannot be accurately predicted. If flood fights are unsuccessful and the levee fails, inundation and possible channel migration could have considerable impacts on ESA-listed fish species and possibly SRKWs.

3.4.3 Flood Fight Activities (February 2020 and November 2021)

The primary effects of the 2020 and 2021 emergency flood repairs were vegetation removal, turbidity, and disturbance related to construction noise and human activity. However, since the construction work occurred during the peak of the floods, any impact from construction was minimized due to the flood conditions of rapidly moving, noisy and highly turbid waters. Most species of fish are not expected to occur in waters immediately adjacent to the levees during the short duration of the emergency repairs. This is because this was a high energy and turbulent location that was actively eroding, which are conditions that most species of fish tend to avoid.

Effects on terrestrial wildlife likely included displacement of birds and other small vertebrates as a result of construction activities. Construction would have also caused temporary displacement of birds in the project area due to noise and the presence of human activity. Construction may have temporarily displaced small mammals and may have injured or caused mortality of reptiles and rodents.

3.4.3.1 Chinook, Steelhead, and Bull Trout

Taken as a whole, the collective effects of emergency flood fight activities by construction equipment, rock placement, increased turbidity, increased noise, and removal of riparian vegetation would likely have caused direct harm or death to a small number of individual fish. The number of fish harmed or killed would have been extremely small, relative to the populations, because of the limited spatial scale and temporal scale of the emergency work, together with the location of the work along the fast moving outside bend in the river, and the natural behavior of fish to move to quieter/slower moving waters during flood. If very small fish were present at the time, the fast-moving waters would have carried the fish quickly past the work area, further reducing the likelihood of direct harm.

3.4.3.2 Southern Resident Killer Whale

SRKWs do not enter the Skagit River and so were not directly impacted by the flood fight activities. There is potential for indirect impacts via impacts to their prey, which include Chinook and chum salmon.

3.4.4 Repair In-Place Alternative

3.4.4.1 Chinook, Steelhead, and Bull Trout

The proposed in-water work window coincides with the least impactful timing on salmonids in the Skagit River. Although the work window avoids most adult salmonids and particularly vulnerable fry, juveniles that are rearing in the river could be present in small numbers, as well as small numbers of migrating adults.

The proposed levee repairs would have impacts like those described for the flood fight activities. Taken as a whole, a small number of listed fish, relative to their respective populations, may be directly harmed or killed during construction if they occur directly in the work area. Additionally, disturbance from construction would likely cause juvenile Chinook and steelhead to be displaced from the construction area (toe of the levee) and immediately adjacent areas. These larger juvenile/yearling fish are mobile and capable of evading some construction disturbance, but these fish may be forced to move into other suitable habitats already occupied by other fish or to areas that are devoid of natural cover. Thus, there is an increased risk of predation on the juveniles while they move and hold away from construction area. The forced movement may also cause juveniles to expend additional energy while swimming in the Skagit River current, though at a lower level than during the flood events. Increased energetic costs, combined with physiological stress caused by response to the construction disturbance, are likely to reduce growth, fitness, and survival in a very small number of juveniles, relative to their respective subpopulations. In a long-term view, the repairs would keep fish in the river up to a 50-year storm event and keep the river from migrating into developed area. The mitigation measures would minimize the effects that the levees have on edge habitat by providing riparian vegetation, increased flood refuge at the DD 12 levee compared to existing conditions, and in-water habitat features from the anchored complex woody material downstream of the DD 3 levee.

3.4.4.2 Southern Resident Killer Whale

SRKW's do not enter the Skagit River and so were not directly impacted by the flood fight activities. There is potential for indirect impacts via impacts to their prey, which include Chinook and chum salmon.

3.5 FISH AND WILDLIFE

3.5.1 Existing Conditions Pre-Flood (2020)

The Skagit River through the project reach provides migratory and rearing habitat for all the salmon species that use the Skagit River, as well as habitat for a diversity of other aquatic and terrestrial species. Salmonid species in the project area include Chinook, pink (*O. gorbuscha*), chum (*O. keta*), steelhead, coho (*O. kisutch*), sockeye (*O. nerka*), bull trout, rainbow trout (*O. mykiss*), cutthroat trout (*O. clarkii*), and kokanee (*O. nerka*) (WDFW 2018a). The Skagit River, with its 2,900 tributaries, is the only river system outside of Canada and Alaska that supports all five species of Pacific salmon (WDOE 2016).

The urban and rural areas surrounding the project sites are frequented by a variety of wildlife species. Mammals observed within the Skagit Wildlife Area downstream of the project site include black-tailed deer (*Odocoileus hemionus*), coyote (*Canus latrans*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), skunk (*Mephitis mephitis*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), river otter (*Lutra canadensis*), red fox (*Vulpes vulpes*), and harbor seals (*Phoca vitulina*) (WDFW 2006).

The Skagit Delta is one of the major waterfowl wintering areas in the Pacific Flyway (WDFW 2006). At least 180 species of birds have been documented in the project area (Audubon 1997). A diverse group of shorebirds found near the project sites includes dunlin (*Calidris alpina*), western sandpiper (*Calidris mauri*), black-bellied plover (*Pluvialis squatarola*), greater yellowlegs (*Tringa melanoleuca*), Wilson's phalarope (*Phalaropus tricolor*), and various waterfowl such as ducks, geese, and swans (Audubon 1997). Birds of prey include osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus hudsonius*), red-tailed (*Buteo jamaicensis*) and rough-legged (*Buteo lagopus*) hawks, short-eared (*Asio flammeus*) and barn

(*Tyto alba*) owls, and the occasional golden eagle (*Aquila chrysaetos*). In addition, a diverse assemblage of smaller upland birds occurs in the project area.

Small rodents such as various species of mice, shrews, voles, and moles are numerous (WDFW 2006). Reptiles that occur in the area include garter snake and painted turtle (*Chrysemys picta*), while amphibians include several species of frogs and salamanders.

3.5.2 No Action

The No Action Alternative could result in continued erosion of the bank, especially in a flood event, and could leave the levee vulnerable to continued damage and breaching. A breach would result in inundation behind the levee with associated severe turbidity and potential pollution impacts to the river. A flood fight would likely be undertaken to prevent a breach. Such activities would likely cause fish and wildlife to leave the area. Emergency actions would entail more in-water work and vegetation clearing that would have greater impact on fish and wildlife than a scheduled repair action. The exact effect to fish and wildlife associated with emergency flood actions is difficult to quantify or predict but does have the potential to be considerable if the flood event warrants repairs at a damaged site.

3.5.3 Flood Fight Activities (February 2020 and November 2021)

Emergency flood fight activities caused short-term impacts to fish and wildlife. Primary impacts were a temporary increase in turbidity, noise, vibration, and human activity caused by heavy equipment use. These impacts may have temporarily displaced fish and wildlife during construction, but fish would have likely returned as soon as construction was complete. Effects to fish and wildlife due to the flood fight activities was temporary and localized.

3.5.4 Repair In-Place Alternative

Repairs under this alternative would cause short-term impacts to fish and wildlife. Impacts to fish would be like those described in section 3.4. The primary impacts would be a temporary increase in turbidity and an increase in noise, vibration, and human activity caused by heavy equipment use. These impacts may temporarily displace fish and wildlife during construction, but fish would be expected to return as soon as construction is complete. Therefore, effects to fish and wildlife due to this alternative would be temporary and localized. Additionally, the proposed mitigation measures would help offset the effects that the levees have on edge habitat. The addition of willow plantings would provide better habitat for fish since riparian vegetation has been known to increase shade and therefore can reduce water temperature (Hannah et al. 2008). The anchored rootwads would create in-water habitat features at the DD 3 levee creating important habitat for fish at a wide range of river flows, such as flood events (Shirvell 2011).

3.6 AIR QUALITY AND NOISE

3.6.1 Existing Conditions Pre-flood (2020)

The Environmental Protection Agency's (EPA) Clean Air Act sets National Ambient Air Quality Standards (NAAQS) to regulate harmful pollutants (42 U.S.C. § 7403). NAAQS are set for six common air pollutants: ozone, carbon monoxide, nitrogen dioxide, particulate matter (solid and liquid particles suspended in the air), sulfur dioxide, and lead. Areas that persistently exceed the standards are designated as nonattainment areas. The EPA sets *de minimis* thresholds for pollutants in nonattainment areas (40 CFR 93 § 153). Once a nonattainment area has attained and maintained NAAQS, they may be redesignated as "maintenance areas". According to the Washington Department of Ecology (Ecology), all areas of Washington, except a small area in

Whatcom County, currently meet air quality standards (Ecology 2022a). No air quality exceedances exist in Skagit County within the project area.

The project site and its surroundings have been developed, with myriad activities contributing to ambient noise levels. Human-related existing noise sources at the project site include traffic, construction, internal combustion engines, and agricultural activities.

3.6.2 No Action

The No Action Alternative would have no direct effect on air quality or noise. Emergency actions may be required to protect lives and property in the event of a flood. These actions would likely have similar air emissions and noise effects as the preferred alternative but could differ depending on the scope of the emergency action. Effects to air quality and noise would be temporary and within the range of intensity of noise produced by on-going activities in the area. Effects on air quality and noise would be negligible.

3.6.3 Flood Fight Activities (February 2020 and November 2021)

Construction vehicles and heavy equipment used during the emergency repair temporarily and locally generated gasoline and diesel exhaust fumes. The small area of construction and the short duration of the work limited the impact to air quality. Emissions generated by the activity were minor and short-term and well below the *de minimis* threshold. Unquantifiable but insignificant exacerbation of effects of carbon dioxide emissions on global climate change occurred.

There was a localized increase in ambient noise levels from equipment operation during flood fight activities. Work was mostly completed during daylight hours but due to the emergency nature of the events, work sometimes occurred during the night. Work outside daylight hours generated temporary noise impacts to surrounding properties. There was no long-term change in air quality; minimal noise occurred because of the project. Effects on air quality and noise were negligible.

3.6.4 Repair In-Place Alternative

Air Quality: Impacts to air quality for the proposed repairs would be the same as those described above from the emergency repairs. Construction vehicles and heavy equipment used during the proposed levee repairs would temporarily and locally generate increased gasoline and diesel exhaust fumes. The small area of construction and the short duration of the work would limit the impact to air quality. Unquantifiable but negligible exacerbation of effects of CO₂ emissions on global climate change would be anticipated because of the proposed levee repairs.

Noise: Given the urban location of the proposed repairs, any potential disturbance resulting from slightly elevated short-term ambient noise levels from construction activities would be negligible. No long-term changes in noise levels would occur because of the project. Effects to noise of the proposed levee repairs would be the same as those described above from the emergency repair.

3.7 CULTURAL RESOURCES

Cultural resources can include prehistoric (i.e., pre-contact), protohistoric (i.e., contact), and historic (i.e., post-contact) sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or other applicable reasons. Depending on their condition and use, such resources can provide insight into living conditions of previous civilizations or retain cultural and religious significance to contemporary groups, referred to as Traditional Cultural Properties (TCPs).

NEPA instructs Federal agencies to assess the probable impacts of their actions on the human environment, defined as the natural and physical environment and the relationship of people with that environment (40 CFR § 1508.1). Similarly, under 36 CFR § 800, the implementing regulations of the National Historic Preservation Act (NHPA) of 1966 (as amended in 2000), Federal agencies must take into consideration the potential effect of an undertaking on historic properties, which refers to cultural resources listed in or eligible for inclusion in, the National Register of Historic Places (NRHP). To be determined a historic property, the resource must meet one or more of the criteria established by the National Park Service, and outlined in 36 CFR § 60.4, that make the resource eligible for inclusion in the NRHP. Procedures for identification, evaluation, and treatment of cultural resources are contained in a series of Federal and state laws, regulations, and agency guidelines. Archaeological, architectural, and Native American resources are also protected by a variety of laws and their implementing regulations: the Archaeological and Historic Preservation Act of 1974, the Archaeological Resources Protection Act of 1979, the American Indian Religious Freedom Act of 1978, and the Native American Graves Protection and Repatriation Act of 1990 (all as amended).

As stipulated in 36 CFR § 800.8, Section 106 can be coordinated with the requirements of NEPA. Preparation of this EA can be sufficient in fulfilling the required determination of effects for Section 106 compliance. Section 106 requires Federal agencies to afford the Advisory Council on Historic Preservation (ACHP) and other interested parties a reasonable opportunity to comment.

Typically, cultural resources are subdivided into archaeological resources (pre-contact, contact, and post-contact sites where human activity has left physical evidence) or architectural resources (buildings or other structures or groups of structures that are historic or aesthetic significance). Archaeological resources comprise areas where human activity has measurably altered the earth or intact deposits of physical remains are found.

TCPs or sacred sites can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, or areas where plants, animals, or minerals exist that Native Americans or other cultural groups consider to be essential for the preservation of traditional cultural practices, as stated in National Register Bulletin 38.

To identify cultural resources that could be potentially affected by the Proposed Action, the area within the archaeological, architectural, and Native American resources would have the potential to be affected must be determined. As defined by 36 CFR § 800.16(d), the area of potential effects (APE) represents the "... geographic area or areas within which an undertaking [i.e., Proposed Action] could cause changes in the character or use of historic properties, if any such [properties] exist." In delineating the APE, factors considered include the elements of the Proposed Action and the existence of buildings, vegetation, and terrain with respect to potential visual or audible impacts.

3.7.1 Existing Conditions Pre-flood (2020)

The Skagit Delta and adjacent uplands were used and occupied by human populations for a considerable span of time. Although the exact duration is unknown, evidence that supports an estimate of 12,000 years was discovered elsewhere in the Puget Sound region and on the Olympic Peninsula. However, within the Skagit Delta, the oldest cultural resources found date to less than 5,000 years ago.

Before the 1850s, the Skagit Delta constituted a part of the territory associated with several culturally similar Native American groups. The northern delta was occupied by the Swinomish and Samish. The North Fork and adjacent areas were inhabited by the Lower Skagits. The South Fork was Kikiallu territory. The Upper Skagits resided in the area north and east of Mount

Vernon. Euro-American settlement and dislocation of the resident Native American populations did not begin until the late 1850s. The Point Elliott Treaty of 1855 required most of the local Native Americans to resettle outside the delta on either the Swinomish or Tulalip Reservations.

The first European Americans (Euro-Americans) homesteaded along the Skagit River beginning in 1859. In 1863, the first trading post in the delta was opened at the point of divergence between the North and South Forks of the river. Six years later, the post became the site of Skagit City, the earliest river town. As the area's population grew, many additional towns were founded. Today, Mount Vernon, Burlington, and Sedro-Woolley remain important centers of population and commerce. The early settlers quickly recognized the need for dikes to protect their holdings against the Skagit River's frequent floods. Initially, levees were tended to individually by adjacent landowners, but the magnitude of the task soon prompted a collective action, thus forming the diking districts (DD) in the late 1800s and early 1900s.

A literature search and records review was conducted through the Department of Archaeology and Historic Preservation's (DAHP) Washington Information System for Architectural and Archaeological Records Data on April 6, 2023. The search identified 15 previous reports within a half-mile radius of the APE. One historic property, the DD 12 Levee, was recorded within the APE. There are several cultural resources located near the DD 3 levee repair site. These sites are not within or immediately adjacent to the APE and will not be impacted by the proposed action.

In 2020 and 2022 USACE archaeologists completed intensive pedestrian surveys of the repair sites at the DD 1, the DD 3, and the DD 12. At the DD 1 levee, the APE is highly disturbed by modern development of the grounds surrounding the levee, as well as the levee itself. At the DD 3 levee, modern development by the city of Mount Vernon has disturbed the adjacent context, as well as capped the levee crown with a concrete recreation trail. A desk audit of the mitigation site located off-site from DD 3 indicated that historically it was a massive area of swampland, into which the Skagit River flowed. At the DD 12 levee, the APE is highly disturbed by modern development of the grounds surrounding the levee, as well as the levee itself.

USACE notified DAHP and affected Tribes regarding the proposed action in Washington State. In March of 2021, the USACE notified the DAHP, the Samish Indian Nation, the Sauk-Suiattle Tribe, the Swinomish Tribe, the Tulalip Tribe, and the Upper Skagit Tribe that the USACE planned to undertake the repair and rehabilitation of the damaged sections of the DD 3 and the DD 12 Site 1 areas. In February 2023, the USACE notified the DAHP, the Samish Indian Nation, the Upper Skagit Tribe, the Swinomish Indian Tribal Community, the Sauk-Suiattle Tribe that the USACE planned to undertake emergency repair and rehabilitation of the damaged sections of the DD 1 and the DD 12 Sites 2 and 3 repair sites.

USACE requested information on the presence of known historic properties within the emergency footprint. USACE received no comments from DAHP or the Tribes.

Based on the literature review and a records search, cultural resource survey, and coordination with DAHP and the contacted Tribes, USACE determined that the proposed repairs would have no adverse effect to historic properties within the APE that are listed in or determined eligible for listing in the NRHP. For DD 3 and DD 12 site 1, the DAHP concurred with the findings from the October 2020 survey and report. A finding of No Adverse Effect was determined in 2021 (DAHP Project: 2021-03-01287 2021). Additionally, DAHP concurred with USACE determination for DD 1 and DD 12 site 2 and 3 (DAHP Project: 2023-01-00372 /2023-01-0037-COE-S).

3.7.2 No Action

The No Action Alternative would result in continued degradation of the levees through natural processes. It is likely that at an unknown time the levees would fail causing irreparable damage

to the structure in addition to potentially causing adverse effects to historic properties and unevaluated cultural resources the levees are currently protecting.

3.7.3 Flood Fight Activities (February 2020 and November 2021)

USACE notified the DAHP and affected Tribes during emergency flood fight activities in Washington State. On January 30, 2020, USACE notified the DAHP, Samish Indian Nation, Upper Skagit Tribe, Swinomish Indian Tribal Community, Sauk-Suiattle Tribe, Tulalip Tribes, Suquamish Tribe, Nooksack Indian Tribe, and Lummi Nation that USACE planned to undertake emergency flood fight activities at the DD 12 levee. On November 10, 2021, USACE notified the DAHP, Samish Indian Nation, Upper Skagit Tribe, Swinomish Indian Tribal Community, Sauk-Suiattle Tribe, Snoqualmie Indian Tribe, Tulalip Tribes, Stillaguamish Tribe of Indians, Muckleshoot Indian Tribe, Suquamish Tribe, Confederated Tribes and Bands of the Yakama Nation, Nisqually Tribe, and Puyallup Tribe that USACE planned to undertake emergency flood fight activities at the DD 3 and DD 12 levees.

USACE requested information on the presence of known historic properties within the emergency footprint. USACE sent daily updates to DAHP and Tribes following the initial notifications. USACE received no comments from DAHP or the Tribes.

3.7.4 Repair In-Place Alternative

Under this alternative, the DD 1, DD 3, and DD 12 levees would be repaired and would avoid adverse effects to historic properties and unevaluated cultural resources. Based on the literature review and a records search, cultural resource survey, and coordination with DAHP and the contacted Tribes, USACE determined that the proposed repairs would have no adverse effect to historic properties within the APE that are listed in or determined eligible for listing in the NRHP. DAHP has concurred with USACE determinations (Appendix I). Effects on cultural resources would be negligible.

3.8 ENVIRONMENTAL JUSTICE

Executive Orders:

1. **EO 12898:** Environmental Justice in Minority Populations and Low-Income Populations,
2. **EO 14008:** Tackling the Climate Crisis,
3. **EO 13985 & 14091:** Advancing Racial Equity and Support for Underserved Communities Through the Federal Government
4. **EO 14096:** Revitalizing Our Nation's Commitment to Environmental Justice for All

"Environmental Justice" is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income regarding the development, implementation, and enforcement of environmental laws, regulations, and policies, with no group bearing a disproportionate burden of environmental harms and risks. Environmental justice and disproportionate impacts to disadvantaged communities shall be considered throughout the Civil Works programs and in all phases of project planning and decision-making, consistent with the goals and objectives of various Administration policies.

EO 12898 directs Federal agencies to take the appropriate steps to identify and address any disproportionately high and adverse human health or environmental effects of Federal programs, policies, and activities on minority and low-income populations. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. EO 14008 updates EO 12898 and has expanded Federal agencies' responsibilities for assessing environmental justice consequences of their actions. EO 13985,

EO 14091, and EO 14096 charge the Federal Government with advancing equity for all, including communities that have long been underserved, and addressing systemic racism in our Nation's policies and programs.

3.8.1 Existing Conditions Pre-flood (2020)

An analysis of demographic data was conducted to derive information on the approximate locations of low-income and minority populations in the community of concern. Since the analysis considers disproportionate impacts, three areas were defined to compare the area affected by the project and a larger regional area that serves as a basis for comparison and includes the area affected. The larger regional area is defined as the smallest political unit that includes the affected area and is called the community of comparison. For purposes of the analysis, the affected area is approximately a 5-mile radius around the project area, and the Cities of Burlington and Mount Vernon, Washington are the communities of comparison. Demographic information was also compared against the State of Washington and United States for reference. The EPA's Environmental Justice (EJ) Screening and Mapping tool, also known as the EJScreen tool, was used to obtain the study area demographics (EPA 2023c, Appendix D).

The aggregate minority population is estimated at 32 percent in the affected area, 33 percent in the State of Washington, and 40 percent for the United States (EPA 2023c, Appendix D). The aggregate population percentage in the affected area does not exceed 50 percent and is more than the state average. The EO does not provide criteria to determine if an affected area consists of a low-income population. For purposes of the assessment, the Council on Environmental Quality (CEQ) criterion for defining low-income population was adapted to identify whether the population in an affected area constitutes a low-income population. An affected geographic area is considered to consist of a low-income population (i.e., below the poverty level, for purposes of this analysis) where the percentage of low-income persons: 1) is greater than 50 percent, or 2) is meaningfully greater than the low-income population percentage in the general population or other appropriate unit of geographic analysis. The U.S. Census Bureau poverty assessment weighs income before taxes and excludes capital gains and non-cash benefits (such as public housing, Medicaid, and food stamps). The aggregate low-income population is estimated at 27 percent in the affected area, 24 percent in the state of Washington, and 30 percent for the United States (EPA 2023c, Appendix D). The percentage in the affected area (27 percent) does not exceed 50 percent. Therefore, affected area is not considered to have a high concentration of low-income population.

The EPA's EJScreen tool also provides an index on environmental indicators (EPA 2023c). The EJ index is a combination of environmental and demographic information. There are 12 EJ Indexes in EJScreen reflecting the 12 environmental indicators. The EJ Index uses the concept of "excess risk" by looking at how far above the national average the block group's demographics are. EPA considers a project to be in an area of potential EJ concern when an EJScreen analysis for the impacted area shows one or more of the 12 EJ Indexes at or above the 80th percentile in the nation and/or state. The area consisting of the repair and 5-mile buffer is over the 80th percentile for 2 of the EJ indexes. The Air Toxics Cancer Risk is between the 80th-90th percentile and the Air Toxics Respiratory Hazard Index (HI) is between the 80th-90th percentile (EPA 2023c, Appendix D). According to the EPA, air toxics are defined as airborne substances that cause or may cause serious health, environmental, or ecological effects (EPA 2023a). EPA has identified 188 pollutants as air toxics in Section 112 of the Clean Air Act (EPA 2023a).

Additionally, as part of the environmental justice analysis, the CEQ's Climate and Economic Justice Screening Tool was examined for disadvantaged communities. Communities are

considered disadvantaged if they are in a census tract that meets the threshold for at least one of the tool's categories of burden and corresponding economic indicator or are on the lands of a federally recognized Tribe. The project site is not located within a disadvantaged track (CEQ 2023).

3.8.2 No Action

The Skagit DD 1, 3, and 12 levees provide a 50-year LOP in their undamaged condition to Mount Vernon, Burlington, and unincorporated Skagit County. In the damaged condition, the levees presently provide an approximate 1-year LOP. The levees would likely be further damaged in future flood events and could fail, which would endanger homes, businesses, agricultural lands, and other public infrastructure.

3.8.3 Flood Fight Activities (February 2020 and November 2021)

The emergency flood repairs to DD 12 Site 1 and DD 3 provided protection to homes, businesses, agricultural lands, and other public infrastructure. Without the emergency repair, the levees would have continued to erode during the flood which could have resulted in levee failure. Construction vehicles and heavy equipment used during the emergency repair resulted in a short-term localized increase in gasoline and diesel exhaust fumes. The small areas of construction and the short duration of the work limited the impact to air quality.

Construction-related traffic may have caused temporary increases to, and disruption of, local traffic. Flaggers and signs were used, as needed, to direct traffic safely around the construction site. However, construction occurred during peak flooding when the levee was actively being damaged. It is likely that the public would have avoided these areas at the time regardless of construction due to safety concerns. Overall, the emergency repairs to DD 12 Site 1 and DD 3 provided a benefit to persons, including disadvantaged minority, low-income, and Tribal communities, residing in the floodplain who may have otherwise been affected by flooding. Thus, there are no disproportionate adverse impacts imposed on those communities, as compared with the larger reference population, through repair of the levees.

3.8.4 Repair In-Place Alternative

The preferred alternative to repair the existing levee systems does not involve a facility siting decision and would not disproportionately affect minority or low-income populations nor have any adverse human health impacts. The area is over the 80th percentile for 2 of the EJ indexes. The project would not cause long-term increases to any of the 12 EJ indexes. Only minor and temporary increases related to construction equipment emissions are anticipated. Other EJ Indexes unrelated to emissions would remain unaffected (e.g., Superfund proximity, wastewater discharge indicator, etc.). The project maintains flood protection for the affected area. If the preferred alternative is not implemented, communities would experience greater flood risk. No interaction with other projects would result in any such disproportionate impacts. No cumulative impact to environmental justice is expected from interaction of the proposed levee repairs with other past, present, and reasonably foreseeable projects. Further, Tribal governments that are also environmental justice communities in the project area have been engaged and informed about the proposed action. The proposed action would not directly or through contractual or other arrangements, use criteria, methods, or practices that discriminate based on race, color, or national origin, nor would it have a disproportionate effect on minority or low-income communities.

Because the levees protect the area from flooding of the Skagit River, the area of analysis for environmental justice purposes also includes the floodplain for these rivers. The preferred alternative, which repairs the Skagit DD 1, 3, and 12 levees to their pre-damage LOP, would provide a universal benefit to persons, including disadvantaged minority, low-income, and Tribal

communities, residing in the floodplain. Thus, there are no disproportionate adverse impacts imposed on those communities, as compared with the larger reference population, through repair of the levee.

3.9 RECREATION

3.9.1 Existing Conditions Pre-flood (2020)

Several outdoor recreational facilities are present near each repair site. Upstream of the DD 3 levee repair site is Lions Park. Lions Park is a 1.6-acre park with sheltered and unsheltered picnic areas, playground equipment, and public restrooms. A paved waterfront trail runs from Lions Park along the levee crest to downtown Mount Vernon. At the DD 1 levee, there is a river access point that people use for swimming, fishing, and walking their dogs. There are no recreational facilities immediately behind the DD 12 levee at the project site, although parks are present downstream of the repair site, such as the Skagit River Park Sports Complex Playfields. Otherwise, the levee top is used as an unofficial recreational trail. Both levees are used for river access and river-dependent recreational activities such as fishing, hiking, dog-walking, birdwatching, photography, and bicycling.

3.9.2 No Action

Under the No Action Alternative, a higher risk exists for flood damage to recreation. If the levees are not repaired, and flooding occurs due to breaches in weak sections of the levee, recreational use and access behind the levee could be interrupted or damaged. Depending on the severity of flooding, emergency flood fight efforts may occur to protect lives and property. These activities and local efforts to maintain the levees are expected to be sufficient to maintain existing recreation. Effects on recreation would be negligible.

3.9.3 Flood Fight Activities (February 2020 and November 2021)

During the flood fight activities, recreational use at each levee was temporarily disrupted by flooding and flood fight activities. At the DD 3 levee, the path between Lions Park and downtown Mount Vernon was temporarily closed during construction to ensure public safety. Informal recreational use of the DD 12 levee crest was similarly impacted. Recreational use was restored after flood fight activities were completed. Effects to recreation from the flood fight activities were negligible.

3.9.4 Repair In-Place Alternative

Under this alternative, a temporary disruption would occur to recreational use at each levee like that during flood fight activities. To ensure public safety, access to the repair sites would be prohibited during construction. Mitigation may replace lost recreational fishing in the lower Skagit River by replacing affected fish habitat (e.g., anchored and unanchored woody material), but not to a quantifiable degree. Access would return after repairs are completed with no long-term negative impacts to recreation. Effects to recreation would be negligible.

4 UNAVOIDABLE ADVERSE EFFECTS OF THE PREFERRED ALTERNATIVE

Unavoidable adverse effects associated with the preferred alternative at each site would be (1) temporary and localized increases in noise, activity, and emissions, which may affect fish and wildlife in the area; (2) temporary and localized disruption of local traffic by construction activity and vehicles; (3) irretrievable commitment of fuels and other materials for repairs; (4) temporary and localized increase in turbidity levels during in-water construction, which may affect aquatic

organisms in the area; and (5) removal of remaining vegetation from within the proposed construction areas in the riparian zone. The vegetation removal has the longest duration of impact due to the length of time needed for vegetation to regrow to a similar size. Vegetation loss will be mitigated by the proposed plantings.

5 CUMULATIVE EFFECTS

The CEQ regulations implementing NEPA define cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions (40 CFR §1508.1).

The Skagit River Basin has been substantially modified in the last 150 years. Dams, levees, irrigation projects and other water extraction and control projects have confined the river, impacted water quality, and altered flows. Riparian habitat has been lost, side channel and other floodplain features have been cut-off, and salmonid populations have steeply declined. The proposed repairs contribute to these impacts.

As the local non-federal sponsors, the Diking Districts 1, 3, and 12 continue to maintain the levee system and conduct periodic repairs and vegetation maintenance to the levees. These actions by the local sponsors maintain the status quo. Future flooding on the Skagit River and its tributaries is likely to damage non-federal structures. Non-federal entities would likely undertake at least some repair actions under those circumstances and may seek Federal assistance with repairs or emergency responses. In February 2020 and November 2021, the Skagit River experienced record flooding. It is possible that additional damage sites were created by this event and the local sponsors could request Federal assistance from the USACE for additional repairs. If the USACE determines that the damages are eligible for assistance under the Public Law 84-99 Levee Rehabilitation Program, then additional repairs would take place. The scope and effects of those actions would likely be like those of the present action.

Historical modifications within the watershed have included commercial and residential development, farming, and extensive road development, which have substantially modified the river, watershed hydrology and water quality, and the habitat in the floodplain. Agricultural practices would continue to occur throughout the basin in the foreseeable future, consistent with current practices. Future development, including residential or commercial construction, road development, and expansion of water, sewer, and other utilities, is expected as the surrounding community and regional population grow, and these would add to the effects of past activities.

Repairs to the Skagit Levee, as addressed in this EA, would maintain but not appreciably add an increment of ecological losses in the active floodplain at the repair in-place site. When evaluated in the context of past, present, and reasonably foreseeable future actions, the proposed project would not result in significant incremental detrimental effects when considered in conjunction with other past and present actions, and future proposals.

6 COMPENSATORY MITIGATION

Mitigation measures to offset lost habitat function of riverine edge habitat from the preferred alternative are described in section 2.5.2. Mitigation includes willow plantings, topsoil and hydroseed, levee layback, and anchored rootwads. These mitigation features offset project impacts to ESA-listed aquatic species, in addition to benefitting various terrestrial species.

USACE will inform the non-federal sponsors that the willow plantings are part of the repair and should only be trimmed to the minimal amount necessary to retain adequate visual fields for subsequent levee safety inspection.

7 COORDINATION

The following agencies and entities have been involved with the environmental coordination of the proposed project, the flood fight activities, or both:

- Skagit County DD 1
- Skagit County DD 3
- Skagit County DD 12
- USFWS
- NMFS
- Ecology
- DAHP
- Samish Indian Nation
- Sauk-Suiattle Indian Tribe
- Skagit River System Cooperative
- Swinomish Indian Tribal Community
- Tulalip Tribes
- Upper Skagit Indian Tribe

USACE issued a Notice of Preparation (NOP) for the 2020 flood fight and proposed 2021 repairs of the Skagit DD 3 and DD 12 levees (PMP-21-01) on April 1, 2021, for a 30-day public review and comment period. The USACE was unable to complete levee repairs before additional flooding occurred during November 2021 in the Skagit River. The USACE issued an updated NOP, which covers the 2020 and 2021 flood fights and the proposed repairs for DD 1, DD 3, and DD 12 (sites 1-3) levees on March 10, 2023, for a 30-day public review and comment period. Two comments were received during the comment period. The comments and responses are provided in Appendix G.

8 ENVIRONMENTAL COMPLIANCE

This EA is being prepared pursuant to Sec. 102(C) of the NEPA and includes compliance with other laws, regulations, and Executive Orders as discussed below.

8.1 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 the 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. There are no known cultural resources or sacred sites at the project location.

8.2 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.

A USACE biologist attended a site visit during the alternatives formulation phase and did not observe any eagle nests at the project sites (USACE 2022a). Additionally, as recommended by the USFWS, the biologist examined iNaturalist, which did not show any eagle nests within the project vicinity (iNaturalist 2023). No take of either bald or golden eagles is likely through any of the proposed actions, since there are no known nests near any of the work locations.

8.3 CLEAN AIR ACT OF 1972

The Clean Air Act as Amended (42 U.S.C. § 7401 et seq.) prohibits Federal agencies from approving any action that does not conform to an approved State or Federal implementation plan. The operation of heavy equipment, removal and placement of rock, and the operation of vehicles during construction would result in increased vehicle emissions and a slight increase in fugitive dust. These effects would be localized and temporary. The project area is not part of a non-attainment area (Ecology 2022a). USACE has determined that the combination of emissions of the flood fights and the proposed repairs constitutes a routine facility repair generating an increase in emissions that is clearly *de minimis*, and thus a conformity determination is not required, pursuant to 40 CFR 93.153 (c)(2)(iv).

8.4 CLEAN WATER ACT – 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 U.S. 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.

This EA evaluates possible impacts to water quality, primarily with respect to suspended solids, turbidity, and temperature. The proposed levee repair actions would require minimal work in the active channel with some work below the ordinary high water line for most of the repair along the Skagit Levees (Table 1). Construction could be expected to cause minor, temporary, localized increases in turbidity. BMPs, including restrictions on fueling and prevention of fluid leaks from construction equipment, would be employed to minimize and avoid discharge of pollutants into the river.

Three sections of the CWA are pertinent to the proposed actions: Section 401 covers water quality and evaluation of the effects discharges would have on water quality considerations, including standards; Section 402 addresses non-point discharges including, but not limited to, stormwater runoff from construction sites; and Section 404 addresses discharge of fill into Waters of the U.S. Requirements of those three CWA sections are briefly discussed below.

Section 404 and 401: The USACE does not issue Section 404 permits to itself for its own civil works activities, but the USACE addresses substantive compliance of its civil works projects with Sections 401 and 404 under the CWA. 33 CFR 335.2. Three repair sites are considered exempt from regulation under Section 404, and two repair sites and one mitigation site are considered functionally analogous to work authorized by Nationwide Permits (NWP) 3 and 27, as follows.

Pursuant to 404(f)(1)(B) (33 U.S.C. 1344(f)(1)(B)), “[T]he discharge of dredged or fill material...for the purpose of maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, and bridge abutments or approaches, and transportation structures...is not prohibited by or otherwise subject to regulation under this section...” Pursuant to 33 CFR. 323.4(a)(2), the implementing definition of “maintenance” is: “Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design. Emergency reconstruction must occur within a reasonable period after damage occurs to qualify for this exemption.” The proposed repairs at the DD 1, DD 3 and DD 12 Site 3 levees remain within the same prism, profile, and footprint of the original project, and are replacing a rock armor layer with another rock armor layer. As such, they do not present changes in the character, scope, or size of the original fill design. Therefore, the proposed work does not include fill requiring consideration under Section 404, and Section 404 of the CWA is not applicable. These sites within the proposed project do not include fill requiring consideration under Section 404. Since the proposed work at these sites does not result in any regulated discharges into waters of the U.S. regulated under Section 404, Section 401 Water Quality Certification is not required (Appendix E).

NWP 3 authorizes the repair, rehabilitation, or replacement of any currently serviceable structure, provided the structure or fill is not to be put to a different use. Necessary minor deviations in the structure’s configuration are authorized. NWP 27 applies to aquatic habitat restoration, enhancement, or establishment activities. A 404(b)(1) analysis and Public Interest Evaluation were conducted by USACE at the national level for the re-issuance of NWP 3 and NWP 27 in 2021; USACE determined that the activities authorized by the NWP do not have more than a minimal adverse impact on water quality and the aquatic environment and that permitting the covered NWP activities was in the public interest. USACE concludes that the proposed repair to the DD 12 Sites 1 and 2 levees are functionally analogous to work authorized under NWP 3 and the offsite mitigation for the DD 1 and DD 3 levees is functionally analogous to work authorized under NWP 27. USACE therefore adopts and incorporates by reference the previous analysis (86 FR 73522, Reissuance and Modification of Nationwide Permits; 2021 Nationwide Permit 03_Final Decision Document, COE-2020-0002-0572; 2021 Nationwide Permit 27_Final Decision Document, COE-2020-0002-0593).

When a USACE project’s operation and maintenance results in a discharge of dredged or fill material into waters of the United States, USACE follows the regulations at 33 CFR Parts 335-38. USACE does not issue itself CWA permits; USACE does, however, still apply the 404(b)(1) guidelines and other substantive requirements of the CWA and other environmental laws prior to authorizing its own CWA-regulated discharges. One way USACE may meet compliance with applicable environmental laws for its discharges of fill into waters of the United States is through reliance on a general permit. See 33 CFR 337.5 (noting “[t]hrough the general authorization process, compliance with all environmental laws . . . can be accomplished in a single process for a category of activities.”). The regulations affirm that “district engineers should use existing general permits authorized on a statewide or regional basis and the nationwide permits at 33 CFR Part 330 for Federal projects involving the disposal of dredged material.” *Id.* When utilizing a nationwide permit, USACE can expedite review by relying upon prior analysis and associated environmental compliance done for the activities covered by the general permit. See 33 CFR 337.1(a) (noting “the district engineer should issue a public notice for projects involving [a regulated discharge] unless the project is authorized by a general permit.”).

A nationwide permit's decision document analyzes the effects of the proposed activities and determined compliance with all discharge restrictions in the 404(b)(1) regulations at 40 CFR 230.10. USACE's performance of the same type of activity covered by a nationwide permit, as opposed to a private entity's performance, does not alter the underlying substantive environmental analysis of the effects of undertaking that activity. Here, USACE considered the project's proposed regulated discharges and found that no unique aspect of these discharges requires site-specific 404(b)(1) or public interest review analysis beyond that done for the NWP's utilized by analogy: all substantive CWA requirements for those discharges are covered by the associated NWP.

USACE has analyzed the DD 12 Sites 1 and 2 repairs and offsite mitigation pursuant to the general and NWP-specific conditions established by Washington State for the general Water Quality Certification associated with authorization under NWP 3 and NWP 27 and concluded that the proposed work satisfies those conditions. Based on review of these state-specific conditions, this project is covered by the certification approved for these NWP's and an individual Section 401 Water Quality Certification is not required.

Section 402: Section 402 of the CWA is triggered when a construction site would have greater than 1 acre of ground disturbance. The proposed repairs at the DD 1 and DD 3 levees would not exceed 1 acre of ground disturbance. The DD 12 sites (1-3) would cumulatively result in greater than 1 acre of ground disturbance. However, construction will occur during the in-water work window (June 15 to August 31) which coincides with the seasonal period of low rainfall making the work eligible for a waiver from a General Construction Permit. The EPA may waive permitting requirements for stormwater discharges from small construction sites if the project site disturbs less than 5 acres and the rainfall erosivity factor value is less than 5 during the period of construction. Repairs to DD 12 are less than 5 acres and the calculated erosivity factor for the project is less than 5. The USACE submitted a small construction activity waiver to the EPA using the Rainfall Erosivity Calculator for the repairs to DD 12 and received a waiver.

8.5 COASTAL ZONE MANAGEMENT ACT

The Coastal Zone Management Act (CZMA) of 1972 as amended (16 U.S.C. §1451-1464) requires Federal agencies to conduct activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved State Coastal Zone Management (CZM) Program, which includes State laws. USACE has determined that these projects are substantively consistent with the enforceable policies of the State Clean Air Act, State Water Pollution Control Act, and the State Shoreline Management Act (SMA). The SMA is locally implemented through the Skagit County, City of Mount Vernon, and City of Burlington Shoreline Master Programs. The USACE sent a CZMA Consistency Determination to Ecology requesting concurrence that the proposed repairs are consistent to the maximum extent practicable with the enforceable policies of the approved CZM Program on April 7, 2023. Ecology concurred with USACE's consistency determination on June 7, 2023 (Appendix H).

8.6 ENDANGERED SPECIES ACT

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species and their critical habitats.

USACE evaluated potential effects to endangered species in the Biological Assessment (BA) and sent it to the USFWS and NMFS on March 20, 2021. An amendment to the BA was also sent to the USFWS and NMFS on March 9, 2023. The BA and BA amendment evaluated effects from the 2020 and 2021 flood fight activities and the proposed levee repairs (Table 2). USACE

in the BA determined that the Repair in Place Alternative would have no effect on the North American wolverine, yellow-billed cuckoo, streaked horned lark, Oregon spotted frog, Puget Sound/Georgia Basin distinct population segment (DPS) of yelloweye rockfish, Puget Sound/Georgia Basin DPS of bocaccio, Southern DPS of eulachon, Southern DPS of North American green sturgeon, and marbled murrelet. This is due to their sensitivities to human encroachment, lack of suitable habitat, or because their presence is so transitory that any temporal effects to these species from construction activities would not be perceived as unusual, cause disruption of behavior or lead to measurable reduction in their prey base.

Table 2. Species and Effects Determinations of the Skagit DD 1, 3, and 12 Levee Repair Projects made by USACE in the BA transmitted to USFWS and NMFS.

Species	Species Effect Determination	Critical Habitat Determination
Puget Sound Chinook salmon	May affect, likely to adversely affect	May affect, likely to adversely affect
Puget Sound Steelhead	May affect, likely to adversely affect	May affect, likely to adversely affect
Coastal/ Puget Sound Bull Trout	May affect, likely to adversely affect	May affect, likely to adversely affect
SRKW	May affect, not likely to adversely affect	May affect, not likely to adversely affect

The USACE has previously consulted on repairs to the DD 3 and DD 12 site 1 levee. On November 8, 2021, the USACE received a biological opinion (BiOp) from NMFS covering the flood fights (2020) and proposed permanent repairs to DD 3 and DD 12 site 1 WCRO-2021-00710). NMFS determined the actions were likely to adversely affect Chinook salmon and steelhead and their critical habitat. Additionally, NMFS determined that the project was not likely to adversely affect SKRWs and their critical habitat. The BiOp also included Reasonable and Prudent Measures and Terms and Conditions (Appendix F). Consultation with USFWS has not been completed and is ongoing.

Shortly after receipt of the NMFS BiOp and before the permanent repairs could be implemented, the USACE responded to widespread flooding in the Skagit River basin. As part of the response, the USACE completed additional emergency flood fight activities at the DD 3 and DD 12 levees. The flooding caused further damage to the levees requiring modifications to the work consulted on previously. Flooding also resulted in new damaged including a portion of the DD 1 levee and DD 12 site 2 and 3 (Figure 1, section 1.1.1). As the scope of the levee repairs has changed, USACE has reinitiated formal consultation for this proposed Federal action. Consultation is ongoing with NMFS and USFWS. The revised proposed Federal action involves similar impacts to the same species in the same geographic area as the levee repairs in the 2021 BA. Further, no new species have been listed or proposed or new critical habitat designated or proposed for the action area. Section 1.1.1 describes the emergency flood fight activities completed in November 2021. The reasonable and prudent measures recommended by the NMFS BiOp were to minimize incidental take from construction and long-term habitat alterations, and to monitor and adaptively manage riparian plantings for a period of three years to ensure 80 percent survival of the total number of plantings installed.

Due to the urgent nature of completing temporary emergency actions during an on-going flood event, USACE may proceed with construction prior to completion of the consultation with the

Services pursuant to the “emergency circumstances” provisions of the ESA consultation regulation, and may complete ESA consultation after the fact rather than delaying the urgent work to complete ESA consultation before construction begins. The applicable regulation is set out at 50 CFR §402.05 (a) and (b) and provides as follows:

- a) Where emergency circumstances mandate the need to consult in an expedited manner, consultation may be conducted informally through alternative procedures that the Director determines to be consistent with the requirements of Section 7(a)-(d) of the Act. This provision applies to situations involving acts of God, disasters, casualties, national defense, or security emergencies, etc.
- b) Formal consultation shall be initiated as soon as practicable after the emergency is under control. The Federal agency shall submit information on the nature of the emergency action(s), the justification for expedited consultation, and the impacts to endangered or threatened species and their habitats. The Service will evaluate such information and issue a biological opinion including the information and recommendations given during emergency consultation

To facilitate conclusion of consultation prior to the necessary date to commence construction, in submitting its BA the USACE has also requested expedited consultation pursuant to 50 CFR 402.14(l).

Though consultation is not complete, USACE has reached an agency determination of species/habitat effect, based on the best factual and technical information available at the time of decision, and following preliminary coordination with the Services.

USACE commits to fully funding and performing all Reasonable and Prudent Alternatives necessary to avoid the likelihood of jeopardy to listed species or destruction or adverse modification of designated critical habitat, as well as RPM/T&Cs necessary and appropriate to minimize the impact of Incidental Take. USACE has incorporated into the proposed alternative the T&Cs from the 2021 BiOp and expects T&Cs for the akin work under reinitiated consultation to be similar.

This EA would be reevaluated after consultation is complete. If necessary, the EA would be supplemented with necessary and applicable corresponding modifications to the scope and/or nature of the project, the procedures and practices used to implement the project, and/or the type and extent of compensatory mitigation associated with the project, and the associated FoNSI will be reassessed.

8.7 MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

The Magnuson-Stevens Fishery Conservation and Management Act, (16 U.S.C. § 1801 et. seq.), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267) requires Federal agencies to consult with NMFS regarding actions that may adversely affect essential fish habitat (EFH) for Pacific coast groundfish, coastal pelagic species, and Pacific salmon. The Act defined EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” EFH is the habitat (waters and substrate) required to support a sustainable fishery and a managed species’ contribution to a healthy ecosystem. Waters include aquatic areas and their associated physical, chemical, and biological properties used by fish. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities. The Skagit River is designated as EFH for Chinook, coho, and pink salmon and functions as a migration corridor, spawning habitat for adults, and rearing habitat for juveniles. Section 10 of the 2021 BA describes effects of the Federal action on essential fish habitat. That analysis reflects the impacts of the updated action, which includes the 2021 flood response and modifications to the action described.

The proposed project will adversely affect EFH for Chinook, coho, and pink salmon. The USACE has requested consultation under the Magnuson-Stevens Fishery Conservation and Management Act. There could be temporary impacts during construction to include substrate disturbance, increased noise, vibration, and minor turbidity. Additionally, the repairs would perpetuate the existing poor shoreline conditions and limit channel migration and floodplain function. Longer lasting impacts include vegetation removal. Potential adverse effects to EFH have been reduced or eliminated by use of conservation measures and BMPs. The USACE outlined this determination in a BA sent to the NMFS on March 20, 2021. NMFS concurred with this determination in its joint BiOp/EFH response on November 8, 2021. Before USACE could complete the proposed repairs, additional flooding occurred in the Skagit River. The USACE provided an amendment to the BA on March 9, 2023, to incorporate the additional flood fight activities (November 2021) and modified repair designs considering the subsequent flood damage. Consultation with the NMFS and the USFWS is ongoing and the USACE has not received updated conservation recommendations to date.

The USACE considered the recommendations included in NMFS's November 8, 2021 EFH response, which the Corps intends to address as follows: (1) The Corps will participate in, and encourage further conversation between and amongst the Diking Districts, Skagit County, Cities in Skagit County, the Services, and interested tribes to discuss the existing flood control system, including how further connection to the floodplain may be restored, and (2) the Corps has committed to monitoring of vegetation plantings for up to two years post-construction, as well as adaptive management of unsuccessful plantings for a limited window of time to further inform the assessment of functionality benefits provided by the federal rehabilitation project.

The Corps intends to proceed with construction prior to completion of consultation with NMFS pursuant to the "emergency Federal actions" provision of the EFH regulations, and to complete EFH consultation after the fact pursuant to 50 CFR Section 600.920(a). The Corps will reevaluate the EA at the time that EFH consultation is complete. If necessary, the Corps will supplement the EA with necessary and applicable corresponding modifications to the scope and/or nature of the project, the procedures and practices used to implement the project, and/or the type and extent of compensatory mitigation associated with the project, and this FoNSI will be reassessed.

8.8 MIGRATORY BIRD TREATY ACT OF 1918 AND EXECUTIVE ORDER 13186, RESPONSIBILITIES OF FEDERAL AGENCIES TO PROTECT MIGRATORY BIRDS

The Migratory Bird Treaty Act (16 U.S.C. § 703-712) as amended protects over 800 bird species and their habitat and commits that the U.S. will take measures to protect identified ecosystems of special importance to migratory birds against pollution, detrimental alterations, and other environmental degradations. EO 13186 directs federal agencies to evaluate the effects of their actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative effects to migratory birds.

Birds inhabit the riparian area of the Skagit River yearlong, and proposed work may overlap with some nesting seasons. Nesting seasons vary by species; however, the majority of local bird species nest between February through July (ESCP 2016). The USACE must complete the proposed work during the approved in-water work window (June 15-August 31) to avoid impacts to aquatic ESA-listed species. As a result of the in-water work window, work in the nesting season for some bird species is necessary and unavoidable. To minimize impacts on bird habitat, the project has been designed to minimize vegetation removal and land clearing to the greatest extent practicable. Impacts to nesting birds is expected to be minimal. No permit for the "take" of migratory birds is required.

8.9 NATIONAL ENVIRONMENTAL POLICY ACT

The NEPA (42 U.S.C. § 4321 et seq.) commits Federal agencies to considering, documenting, and publicly disclosing the environmental effects of their actions. It requires that an environmental impact statement (EIS) be included in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. Major Federal actions determined not likely to have significant effects on the quality of the human environment may be evaluated through an EA. The EA provides sufficient evidence and analysis to allow the agency to determine whether preparation of an EIS is necessary.

This EA evaluates the environmental effects of two Federal actions presenting three events requiring NEPA compliance: emergency response activities during the February 2020 and November 2021 flood fight, signing of the Cooperation Agreement (CA) with the non-federal sponsors on April 3, 2023, and the proposed 2023 levee repairs. The USACE's obligation under NEPA must be satisfied to the fullest extent possible prior to implementation of the Federal action. The flood fight repairs are evaluated retrospectively, and the execution of the 2023 levee repairs is prospectively reviewed in this document. It was not feasible for the USACE to complete all NEPA procedures prior to initiating the temporary flood fight repair measures, and secondly signing the CA with respective diking districts (non-federal sponsors) for the DD 1, 3, and 12 Levee repairs. The following discussion assesses how USACE has nevertheless complied with NEPA's requirement.

8.9.1 NEPA / Emergency Response (February 2020 and November 2021)

The damaging flood event occurred in February 2020 and November 2021. The flood fight activities are described in section 1.1.1.

It was not feasible for the USACE to complete all NEPA procedures prior to accomplishing the Federal actions of emergency response activities during the flood events in February 2020 and November 2021.

The emergency actions taken during both flood events were an emergency response designed to avert more widespread damage that may have resulted from progressive levee failure originating at the vulnerability points generated by flooding damage. The District Commander made a real-time decision, communicated verbally, to proceed with a major Federal action in the absence of full NEPA evaluation and documentation, considering the extremely urgent circumstances then presented.

The 2020 and 2021 temporary flood fight repair efforts are considered an "emergency action" because it was necessary to protect human safety and property and was time-critical in light of a flood event then ongoing. Under NEPA, USACE is required to fully comply with NEPA (Section 102). The USACE's NEPA regulation regarding "emergency actions" allows for completion of NEPA documentation after the fact in emergency situations. Emergency actions are discussed in 33 CFR 230.8 as follows:

"Section 230.8 - Emergency actions. In responding to emergency situations to prevent or reduce imminent risk of life, health, property, or severe economic losses, district commanders may proceed without the specific documentation and procedural requirements of other sections of this regulation. District commanders shall consider the probable environmental consequences in determining appropriate emergency actions and when requesting approval to proceed on emergency actions, will describe proposed NEPA documentation or reasons for exclusion from documentation. NEPA documentation should be accomplished prior to initiation of emergency work if time constraints render

this practicable. Such documentation may be accomplished after the completion of emergency work, if appropriate. Emergency actions include Flood Control and Coastal Emergencies Activities pursuant to Public Law 84-99, as amended, and projects constructed under sections 3 of the [Rivers and Harbors] Act of 1945 or 14 of the Flood Control Act of 1946 of the Continuing Authorities Program. When possible, emergency actions considered major in scope with potentially significant environmental impacts shall be referred through the division commanders to HQUSACE (CECW-RE) for consultation with CEQ about NEPA arrangements.”

Completion of the NEPA documentation prior to project implementation of both flood fights – while still fulfilling the agency’s emergency levee rehabilitation authorities and responsibilities under Public Law 84-99 – was impossible. During the flooding events, insufficient time was available to formally assess and document the environmental impacts of the proposal in a final EA. It was impossible for USACE to complete all the following NEPA procedures prior to the date on which Federal action was necessary: promulgate, and evaluate public comments received in response to a NOP; complete and finalize the EA; determine whether a FoNSI is appropriate or an EIS must be prepared; and execute and promulgate a FoNSI, if deemed warranted.

Therefore, the agency complied with NEPA "to the fullest extent possible" under the circumstances, with respect to emergency response activities during the flood event. The determination to proceed with the emergency repairs was preceded by consideration and a decision to proceed by the District Engineer, reflected through verbal communication. This EA constitutes the after the fact NEPA documentation required by NEPA and the regulation cited above.

8.9.2 NEPA / Cooperation Agreement

The next Federal action was executing the CAs between the USACE and the non-federal sponsors for the proposed 2023 levee repairs. At that time, the Corps had initiated but not yet concluded full NEPA compliance for the levee repair projects. It was not practicable for the USACE to complete all NEPA procedures prior to execution of the CAs with the non-federal sponsors on April 3, 2023. The timing of signature of the Cooperation Agreements was critical, because it was the triggering event in a subsequent series of critical-path steps leading to repair project execution. The Determination of Practicability for NEPA Compliance dated April 3, 2023 articulated the minimum time intervals required for each step in the procurement and execution processes leading up to the deadline for completion of in-water construction, some of which are necessarily sequential, and also took into account the resourcing and sequencing of milestones associated with conducting seven levee repair projects during the summer of 2023 in addition to the DD 1, 3, and 12 levee repairs. If the Corps had failed to timely execute the Cooperation Agreements and initiate a sequence of meeting the subsequent critical-path milestones, the DD 1, 3, and 12 levee repairs would have been in jeopardy of delay, leaving the levees in their current damaged condition for another flood season. Completion of the NEPA documentation prior to executing the Cooperation Agreements, while still fulfilling the agency’s emergency levee rehabilitation authorities and responsibilities under P.L. 84-99, was determined to be not practicable. At the time of execution of the Cooperation Agreements the Corps complied with NEPA “to the fullest extent possible” under the circumstances, considering what was practicable given the exigency of the need of reducing the urgent risk presented by these damaged flood control structures before the next flood season.

8.9.3 NEPA / Proposed Action

The prospective Federal action evaluated in this EA is the proposed repair of the Skagit DD 1, 3 and 12 Levees as discussed in the body of this EA. The proposed action would include both the levee repair and mitigation for impacts to ESA-listed species. This EA has been prepared pursuant to NEPA Sec. 102(C). Effects on the quality of the human environment because of the proposed levee repair are anticipated to be less than significant. The EA has incorporated any necessary and applicable modifications to the scope and/or nature of the project, any effects to the human environment resulting from these modifications, the procedures and practices used to implement the project, and/or the type and extent of compensatory mitigation associated with the project.

8.9.4 NEPA Summary

A NOP for the proposed project was made available for public review and comment on March 10, 2023. The comment period ended on April 9, 2023. Two comments were received during the comment period. The comments and responses are provided in Appendix G.

8.10 NATIONAL HISTORIC PRESERVATION ACT OF 1966

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 if there is an adverse effect to an eligible Historic Property.

As described in section 3.7, the DD 1, DD 3, and DD 12 levee repairs will not adversely effect historic properties. The USACE determined and documented the APE for both direct and indirect effects, as required at 36 C.F.R § 800.4 and determined there would be no historic properties affected by the projects. The SHPO has concurred with the APEs and the USACE's findings for each levee. Concurrence letters from SHPO are located in Appendix I.

8.11 NATIVE AMERICAN TRIBAL TREATY RIGHTS & TRIBAL CONSULTATION UNDER EO 13175, CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENTS

The United States has a unique, legally affirmed Nation-to-Nation relationship with American Indians and Alaska Native Tribal Nations, which is recognized under the Constitution of the United States, treaties, statutes, EOs, and court decisions. The United States recognizes the right of Tribal Governments to self-govern and supports Tribal sovereignty and self-determination. The United States also has a unique trust relationship with and responsibility to protect and support Tribal Nations.

Between 1778 and 1871, the United States entered into about 400 treaties with various Indian nations on a government-to-government basis. Under the United States Constitution, treaties are accorded precedence equal to federal law. Treaty rights are binding on all federal and state agencies, and take precedence over State constitutions, laws, and judicial decisions. Treaty terms, and the rights arising from them, cannot be rescinded or cancelled without explicit and specific evidence of Congressional intent – indicating that Congress was aware of the conflict between its intended action on the one hand and Indian treaty rights on the other, and chose to resolve the conflict by abrogating the treaty. A right enumerated in a treaty ratified by the Senate may only be superseded by a subsequent act of Congress.

The Corps has a trust policy to consult with, and consider views of, federally recognized American Indian Tribes when proposing an action that may have the potential to significantly affect tribal rights, resources and lands. See Department of Defense Instruction (DODI) 4710.02, Section 3, Subject: DOD Interactions with Federally Recognized Tribes (24 September

2018). The Corps discharges that duty by notifying, consulting with, and meaningfully considering tribal concerns that are raised through this consultation process.

In the 1850s, in exchange for the cession of their ancestral lands, numerous tribes in the Pacific Northwest entered into treaties with the United States to secure for themselves, amongst other considerations, the preservation of fishing rights in the ceded areas. These treaties were negotiated and signed by the then-Governor of the Washington Territory, Isaac I. Stevens, and are collectively known as the “Stevens Treaties.”

In 1974, many (but not all) of the Stevens Treaties signatory tribes’ “usual and accustomed grounds” (U&A) within Puget Sound were delineated in a federal court adjudication, *U.S. v. Washington*, 384 F. Supp. 312 (W.D. Wash. 1974). The Stevens treaties reserved the signatory tribes’ right to “take fish at usual and accustomed grounds and stations . . . in common with all citizens of the territory” *U.S. v. Washington*, 384 F. Supp. at 332. Federal case law has recognized that the signatory Tribes also reserved the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds (Fair Share). Over the years, the courts have held that this right also comprehends certain subsidiary rights, such as access to their “usual and accustomed” fishing grounds. See *Northwest Sea Farms v. USACE*, 931 F. Supp 1515 (W.D. Wash.1996).

The USACE has evaluated impacts to fish and wildlife in this project and sent letters to the Samish Indian Nation, Sauk-Suiattle Indian Tribe, Skagit River System Cooperative, Swinomish Indian Tribal Community, Tulalip Tribes, and Upper Skagit Indian Tribe requesting comments on the proposed project and providing the opportunity to initiate government-to-government consultation. USACE received a response letter from the Upper Skagit Indian Tribe on April 12, 2023 and the Skagit River System Cooperative on May 5, 2023 on behalf of the Swinomish Indian Tribal Community and the Sauk-Suiattle Indian Tribe. The USACE response is provided in Appendix J.

8.12 EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT

EO 11988 requires Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The proposed project will only repair existing facilities to pre-flood conditions and will not modify or change the existing floodplain, which is consistent with Executive Order 11988.

8.13 EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS

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

9 SUMMARY OF ASSESSMENT

The No Action Alternative (Alternative 1) does not meet the project's purpose and need. The preferred alternative (Alternative 4) fulfills the project's purpose and need by repairing the Skagit Levee to the pre-damage LOP and repairs the levees in a more resilient and stable way than their pre-damaged condition. Based on the above analysis the proposed Skagit Levee Repair Project would not constitute a major Federal action significantly affecting the quality of the human environment, and therefore does not require preparation of an EIS.

10 References

- Anchor Environmental, L.L.C. 2003. Fish distribution and periodicity in WRIA 1. Prepared for: City of Bellingham, Public Works Department Bellingham, WA.
- Audubon. 1997. Bird Checklist for Skagit County. <http://www.fidalgo.net/~audubon/Lists.htm>.
- Beamer, E, R. Henderson, and K. Wolf. 2010. Juvenile salmon, estuarine, and freshwater fish utilization of habitat associated with the Fisher Slough Restoration Project, Washington 2009. Unpublished report prepared for The Nature Conservancy, Washington. 63 p. Available at www.skagitcoop.org/.
- Brenkman, S.J. and S.C. Corbett. 2005. Extent of anadromy in Bull Trout and implications for conservation of a threatened species. *North American Journal of Fisheries Management* 25:1073-1081.
- CEQ (Council on Environmental Quality). 2023. Climate and Economic Justice Screening Tool. Accessed April 2023 online at: <https://screeningtool.geoplatform.gov/>.
- Chin, A., M.D. Daniels, M.A. Urban et al. 2008. "Perceptions of Wood in Rivers and Challenges for Stream Restoration
- Downs, C.C., D. Horan, E. Morgan-Harris, and R. Jakubowski. 2006. Spawning demographics and juvenile dispersal of an adfluvial Bull Trout population in Trestle Creek, Idaho. *North American Journal of Fisheries Management* 26:190-200.
- Ecology. 2022a. Determining if areas in Washington meet national air quality standards. Accessed on April 1, 2022 online at: <https://ecology.wa.gov/Regulations-Permits/Plans-policies/Areas-meeting-and-not-meeting-air-standards>.
- Ecology. 2022b. Water Quality Atlas. Accessed April 4, 2022 online at: <http://www.ecy.wa.gov/programs/wq/303d/index.html>.
- ESCP (Environmental Services City of Portland). Version 2.1. March 2016. Avoiding Impacts on Nesting Birds, Best Management Practices, Vegetation and Construction Projects.
- EPA (Environmental Protection Agency). 2023a. AirToxScreen Frequently Asked Questions. Accessed April 2023 online at: <https://www.epa.gov/AirToxScreen/airtoxscreen-frequent-questions#emm13>
- EPA. 2023b. EJSCREEN: Environmental Justice Screening and Mapping Tool. Accessed April 2023 online at: <https://www.epa.gov/ejscreen>.
- Ford, J.K.B., G.M. Ellis, and P.F. Olesiuk. 2005. Linking prey and population dynamics: did food limitation cause recent declines of 'resident' killer whales (*Orcinus orca*) in British Columbia. Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Report no. 2005/042. 27 pp.
- Ford, J. K. B., B. M. Wright, G. M. Ellis, and J. R. Candy. 2010. Chinook salmon predation by resident killer whales: seasonal and regional selectivity, stock identity of prey, and consumption rates. DFO Canadian Science Advisory Secretariat Research Document 2009/101
- Fraleigh, J.J., and B.B. Shepard. 1989. Life history, ecology, and subpopulation status of migratory Bull Trout (*Salvelinus confluentus*) in the Flathead Lake and River system, Montana. *Northwest Science* 63:133-143.
- Goetz, F.A., E. Jeanes, and E. Beamer. 2004. Bull trout in the nearshore. Technical Report for the U.S. Army Corps of Engineers, Seattle District.
- Goetz, F.A. 2016. Migration and residence patterns of salmonids in Puget Sound, Washington. PhD dissertation, University of Washington, Seattle, Washington.
- Hanson, M.B., C.K. Emmons, M.J. Ford, M. Everett, K. Parsons, L.K. Park, J. Hempelmann, D.M. Van Doornik, G.S. Schorr, J.K. Jacobsen, M.F. Sears, M.S. Sears, J.G. Sneva, R.W. Baird, and L. Barre. 2021. Endangered predators and endangered prey: seasonal diet of Southern Resident killer whales. *PLOS ONE*. Available online at

- <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0247031>. Accessed May 9, 2023
- Hannah, D.M., I.A. Malcom, C. Soulsby, A.F. Youngson. 2008. "A comparison of forest and moorland stream microclimate, heat exchanges, and thermal dynamics." *Hydrol. Process.*, 22 (7) (2008), pp. 919-940, 10.1002/hyp7003
- iNaturalist. 2023. Accessed April 2023, https://www.inaturalist.org/observations?nelat=48.46368891449153&nelng=-122.2643809837261&place_id=any&swlat=48.38253596141131&swlng=-122.357356058069&taxon_id=5305
- Krahn, M.M., M.J. Ford, W.F. Perrin, P.R. Wade, R.P. Angliss, M.B. Hanson, B.L. Taylor, G.M. Ylitao, M.E. Dalheim, J.E. Stein, & R. S. Waples. 2004. 2004 status review of southern resident killer whales (*Orcinus orca*) under the Endangered Species Act. U.S. Dept. Commerce. NOAA Technical Memo. NMFS-NWFSC 62, 73pp.
- Myers, J.M., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright, W.S. Grand, F.W. Waknotz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status review of Chinook salmon from Washington, Idaho, Oregon, and California. NOAA Technical Memorandum. NMFS-NWFSC-35. Northwest Fisheries Science Center, Seattle, WA.
- NMFS (National Marine Fisheries Service). 1999. Endangered and Threatened Species: Threatened Status for Three Chinook Salmon Evolutionarily Significant Units (ESUs) in Washington and Oregon, and Endangered Status of One Chinook Salmon ESU in Washington; Final Rule, Title 50 CFR Part 17. Federal Register 65, No. 56., 14308-14328.
- NMFS. 2005a. Endangered and Threatened Species: Final Listing Determinations for 16 ESUs of West Coast Salmon, and Final 4(d) Protective Regulations for Threatened Salmonid ESUs: Final rule. Federal Register 70(123):37160-37204.
- NMFS. 2005b. Critical habitat for 12 Evolutionarily Significant Units (ESUs) of salmon and steelhead (*Oncorhynchus* spp.) in Washington, Oregon and Idaho. 50 Federal Register 52629 – 52858.
- NMFS. 2005c. Status Review Update for Puget Sound Steelhead. Updated July 26, 2005. Northwest Fisheries Science Center. Seattle, WA.
- NMFS. 2005d. Endangered and threatened wildlife and plants: Endangered status for southern resident killer whales. 70 Federal Register 69903 – 69912.
- NMFS. 2006. Endangered and Threatened Species; Designation of Critical Habitat for Southern Resident Killer Whale. 71 Federal Register 69054 – 69070.
- NMFS. 2007a. Endangered and Threatened Species: Final Listing Determination for Puget Sound Steelhead; Final Rule. 72 FR 26722-26735.
- NMFS. 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). National Marine Fisheries Service Northwest Regional Office. Seattle, WA. 251 pages.
- NMFS. 2016. Endangered and Threatened Species: Designation of Critical Habitat for Lower Columbia River Coho Salmon and Puget Sound Steelhead; Final Rule. 81 FR 9252 – 9325.
- NMFS. 2019. Final recovery plan for the Puget Sound steelhead Distinct Population Segment (*Oncorhynchus mykiss*). National Marine Fisheries Service. Seattle, WA. 291 pp.
- PSSTRT (Puget Sound Steelhead Technical Recovery Team). 2013. Identifying historical populations of steelhead within the Puget Sound Distinct Population Segment. Final Review Draft. 149 p.
- Rieman, B.E., and J.D. McIntyre. 1993. Demographic and habitat requirements for conservation of bull trout. USDA Forest Service, Intermountain Research Station. General Technical Report INT-302.
- Rieman, B.E. Rieman and G.L. Chandler. 1999. In, Empirical evaluation of temperature effects on bull trout distribution in the Northwest. Final report to U.S. Environmental Protection Agency, Boise, Idaho.

- Seiler, D., P. Hanratty, S. Neuhauser, P. Topping, M. Ackley, and L. Kishimoto. 1995. Wild Salmon Production and Survival Evaluation Annual Performance Report, October 1993 – September 1994. Progress Report F-122-R-2. Washington Department of Fish and Wildlife, Olympia.
- Shirvell, C. 2011. “Role of Instream Rootwads as Juvenile Coho Salmon (*Oncorhynchus kisutch*) and Steelhead Trout (*O. mykiss*) Cover Habitat Under Varying Streamflows”. Canadian Journal of Fisheries and Aquatic Sciences. DOI 10.1139/f90-098. Vol. 47 pp 852-861.
- Skagit County. 2008. Skagit County Monitoring Program, Annual Report 2007 Water Year. Accessed online at: www.skagitcounty.net/SCMP.
- Skagit River System Cooperative (SRSC) and WDFW (Washington Department of Fish and Wildlife). 2005. Skagit Chinook Recovery Plan.
- USACE (U.S. Army Corps of Engineers). 2023. National Levee Database. Online at: [National Levee Database \(army.mil\)](https://www.nationalleveedatabase.army.mil). Accessed June 7, 2023.
- USFWS (U.S. Fish and Wildlife Service). 1999. Endangered and threatened wildlife and plants; determination of threatened status for bull trout in the coterminous United States. Final rule. Federal Register 64(210):58910-58933.
- USFWS. 2004. Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout (*Salvelinus confluentus*). Volume I (of II): Puget Sound Management Unit. Portland, Oregon.
- USFWS. 2010. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States. Final Rule. Federal Register 75: 63898 – 64070.
- USFWS. 2015. Coastal Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*). Lacey, Washington. 160 pages.
- WDFW (Washington Department of Fish and Wildlife). 1998. Salmonid Stock Inventory, Appendix: Bull Trout and Dolly Varden. Olympia, WA: Washington Department of Fish and Wildlife, Fish Program.
- WDFW. 2002. Salmonid Stock Inventory (SaSI) 2002. Olympia, WA. <http://wdfw.wa.gov/fish/sasi/>.
- WDFW. 2006. Skagit Wildlife Area Management Plan. Wildlife Management Program, Washington Department of Fish and Wildlife, Olympia. 140pp.
- WDFW. 2007. Excel spreadsheet received from Jeff Kamps via email.
- WDFW. 2018a. Priority Habitats and Species. Online at: <https://wdfw.wa.gov/mapping/phs/>. Accessed November 4, 2020.
- WDFW. 2018b. SalmonScape. Online at: <http://apps.wdfw.wa.gov/salmonscape/map.html>. Accessed April 25, 2018
- Washington Department of Ecology (WDOE). 2016. Washington State Water Quality Atlas. Accessed online at: <https://apps.ecology.wa.gov/waterqualityatlas/map.aspx>. Accessed on November 19, 2020. Appendices

11 Appendices

- (A) Site Photographs
- (B) Design Plans
- (C) Water Quality Monitoring Plan
- (D) Environmental Justice Analysis
- (E) Clean Water Act Compliance
- (F) Endangered Species Act Coordination
- (G) Public Comments
- (H) Coastal Zone Management Act Coordination

- (I) Cultural Resources Coordination
- (J) Tribal Coordination

APPENDIX A – SITE PHOTOGRAPHS



Photograph 1. Site visit to DD 1 levee on the Skagit River in February 2022 depicting scoured slope because of the November 2021 flood event.



Photograph 2. Site visit to DD 1 levee on the Skagit River in February 2022 depicting scoured slope because of the November 2021 flood event.



Photograph 3. DD 3 levee repair site on the Skagit River showing slope failure from 2020 flood event.



Photograph 4 Scour at damaged segment of DD 3 levee on the Skagit River following 2020 flood event.



Photograph 5. Site visit to DD 3 levee on the Skagit River in February 2022 depicting emergency flood repairs completed in November 2021 immediately following a flood event.



Photograph 6. Site visit to DD 3 levee on the Skagit River in February 2022 depicting emergency flood repairs which were completed in November 2021 immediately following a flood event.

**Skagit DD12
11 MAR 2020**



Photograph 7. Additional cracking observed along the riverward bench of DD 12 Levee Site 1 on the Skagit River in March 2020 after February 2020 flood event.

**Skagit DD12 Flood
fight due to slope in-
stability and cracking**



Photograph 8. Emergency repair work completed in February 2020 along 300 LF of DD 12 Site 1 on the Skagit River. The photograph is looking upstream.



Photograph 9. Photos and map showing extent of the flood fight activities at the DD 12 Site 1 levee repair during the November 2021 flood event in the Skagit River. No in-water work occurred. Rock was stacked on top of rock previously placed during the February 2020 work along the bank and above the waterline of the river during the flood. The bottom two photos show the addition of rock in 2021.



Photograph 10. Location of the cracking on DD 12 site 2 oriented downstream.



Photograph 11. Location of the cracking on DD 12 site 3 oriented downstream.

APPENDIX B – DESIGN PLANS



FY22 P2-503049 DD1
DIKING DISTRICT 1 (DD1)
LEVEE REHAB 2022
MT VERNON, WASHINGTON



An aerial photograph of a river and surrounding land. The river flows from the top right towards the bottom left. The left bank is mostly agricultural fields in shades of green and brown. The right bank is a dense urban area with a grid street pattern. A black arrow points from a white rectangular box labeled "PROJECT SITE" to a specific location on the right bank of the river.

PROJECT LOCATION MAP

SHEET ID	TITLE
	GENERAL
G-001	TITLE, VICINITY MAP, PROJECT MAP, AND INDEX
	CIVIL
CS101	ACCESS AND HAUL ROUTE
CS102	SITE PLAN
G-301	CROSS SECTIONS
	MITIGATION
L-101	MITIGATION ACCESS AND HAUL ROUTE
L-102	MITIGATION SITE PLAN 1 - DD1
L-103	MITIGATION SITE PLAN 2 - DD3
	MITIGATION DETAILS

L-101	MITIGATION ACCESS AND HAUL ROUTE
L-102	MITIGATION SITE PLAN 1 - DD1
L-103	MITIGATION SITE PLAN 2 - DD3
L-501	MITIGATION DETAILS

1. *Journal of the American Medical Association*, 2000; 283: 2686-2692.

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IF SHEET MEASURES LESS THAN 11" X 17"
A REDUCED PRINT, REDUCE TO 11" X 17"

A REDUCED PRINT, REDUCED

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

SAFETY PAYS



A1 MITIGATION SITE PLAN 1 - DD1

GENERAL NOTES:

1. PROJECT ACCESS WILL BE FROM I-5 ONTO E KINCAID ST, ONTO S 3RD ST, ONTO SR-636/ W DIVISION ST, ONTO N BAKER ST.
2. CONSTRUCTION SHALL OCCUR DURING THE ESTABLISHED WORK WINDOW OF JUNE 15 - AUGUST 31 TO MINIMIZE DETRIMENTAL IMPACTS TO FISH HABITAT.
3. STAGING ACTIVITIES WILL BE CONTAINED WITHIN THE SITE LIMITS AND ALL DISTURBED AREAS WILL BE HYDROSEEDED AFTER CONSTRUCTION WORK IS COMPLETED.



DATE	BY

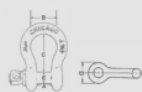
DESIGNED BY U.S. ARMY CORPS OF ENGINEERS WASHINGTON FIELD OFFICE SEATTLE, WASHINGTON	DRAWN BY U.S. ARMY CORPS OF ENGINEERS WASHINGTON FIELD OFFICE SEATTLE, WASHINGTON	CHECKED BY U.S. ARMY CORPS OF ENGINEERS WASHINGTON FIELD OFFICE SEATTLE, WASHINGTON	APPROVED BY U.S. ARMY CORPS OF ENGINEERS WASHINGTON FIELD OFFICE SEATTLE, WASHINGTON
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PROJECT NAME SKAGIT RIVER FLOODING STUDY MITIGATION SITE PLAN 1 - DD1	CONTRACT NAME FILE NO. 14-452
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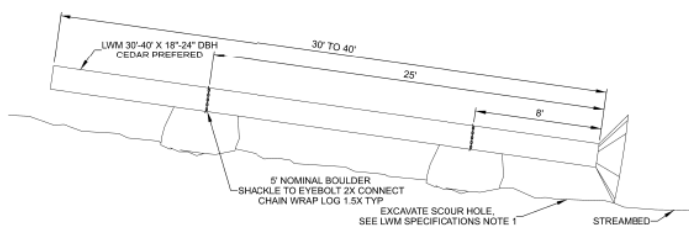
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J1 EYEBOLT DETAIL (TYP.)
NTS

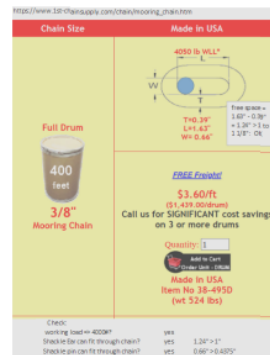
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Shackle Ear can fit through eye?
Shackle pin can fit through chain?



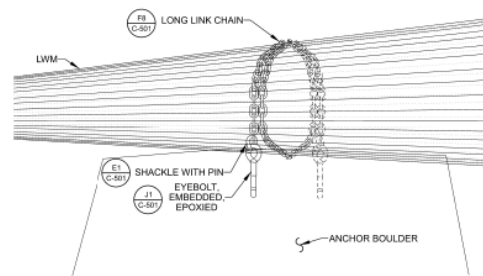
E1 SHACKLE DETAIL (TYP.)



A1 ANCHORED LWD PLACEMENT DETAIL (TYP.)



F8 MOORING CHAIN DETAIL (TYP.)



A10 CHAIN WRAP DETAIL (TYP.)

1. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE TECHNICAL SPECIFICATIONS OF THE CONSTRUCTION MANAGEMENT PLAN (CMP). SEE APPENDIX D: MITIGATION LWM & ANCHORING SPECIFICATIONS
2. CONSTRUCTION SHALL OCCUR DURING THE ESTABLISHED WORK WINDOW OF JUNE 15- AUGUST 31 TO MINIMIZE DETRIMENTAL IMPACTS TO FISH HABITAT.
3. PRIOR TO INSTALLATION, A SITE VISIT BY THE ENGINEER OF RECORD IS REQUIRED TO VERIFY EXISTING FIELD CONDITIONS AND DETERMINE IF DESIGN MODIFICATIONS ARE NEEDED.
4. THE SEVENTEEN (17) ANCHORED LARGE WOODY MATERIAL (LWM) WITH ROOT WAIDS SHALL CONSIST OF WESTERN RED CEDAR AND/OR DOUGLAS FIR SPECIES WITH BOLE LENGTHS OF 30-40 FEET, DIAMETERS AT BREAST HEIGHT OF 16-24 INCHES.
5. LWM SHALL BE INSTALLED ON A SLOPING BANK DOWN TO THE LOW WATER (ABOUT ELEV. 13). LWM SHALL BE PLACED CLOSE TO THE TOE TO MAXIMIZE LONGEVITY AND HABITAT VALUE.
6. ANCHOR BOULDERS SHALL HAVE AN AVERAGE AXIS LENGTH OF 5 FEET, AND BE CONNECTED TO THE LWM WITH HEAVY GALVANIZED CHAIN DRAPED (LINK, SELF-COLORED) VIA SHACKLE AND EPOXYED EYE BOLT.





FY20 P2-489170 DD3
DIKING DISTRICT 3 (DD3)
LEVEE REHAB 2022
MT VERNON, WASHINGTON



INDEX OF DRAWINGS	
SHEET ID	TITLE
GENERAL	
G-601	TITLE, VICINITY MAP, PROJECT MAP, AND INDEX
CIVIL	
CS101	ACCESS AND HAUL ROUTE
CS102	SITE PLAN
C-301	CROSS SECTIONS
MITIGATION	
L-101	MITIGATION ACCESS AND HAUL ROUTE
L-102	MITIGATION SITE PLAN - LARGE WOODY MATERIAL PLACEMENT
	MITIGATION DETAILS



US Army Corps
of Engineers
Seattle District

Date:	15 FEBRUARY 2023
File No.:	E-6-7-63
	Seizure No.:

Recommended by:	02/15/2023
GUY L. GREEN, P.E.	Date
Chief, Design Branch	
Approved by:	
CATHERINE M. PETROFF	02/15/2023
Proj. P.E.	

Signature	Date
FRAN	02/15/2023
ARGAND	02/15/2023

U.S. ARMY CORPS OF ENGINEERS SEATTLE DISTRICT SEATTLE, WASHINGTON	02/15/2023	AN L. N
Prepared by:		Reviewed
		Project Manager
		JANET C
		Submitter

FY22 P2-489175 D03
 SKAGIT RIVER FY22 D03 LEVEE REPAIR
 MT. VERNON, WASHINGTON
 TITLE, VICINITY MAP, PROJECT
 MAP, AND INDEX

SHEET
IDENTIFICATION
G-001

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



GENERAL NOTES:

1. PROJECT ACCESS WILL BE FROM I-5 ONTO W KINCAID ST, ONTO S 3RD ST, ONTO W DIVISION ST, ONTO THE RIVERWALK.
2. ALL IN WATER WORK SHALL OCCUR BETWEEN JUNE 15 TO AUGUST 31 TO MINIMIZE ECOLOGICAL IMPACT TO WILDLIFE HABITAT.
3. STAGING ACTIVITIES WILL BE CONTAINED WITHIN THE SITE LIMITS AND ALL DISTURBED AREAS WILL BE HYDROSEDED AFTER CONSTRUCTION WORK IS COMPLETED.



DATE	DESCRIPTION

ISSUE DATE	ISSUED BY	DESIGNED BY	CHECKED BY	DATE

U.S. ARMY CORPS OF ENGINEERS SEATTLE DISTRICT SEATTLE, WASHINGTON	PROJECT NO.: P-4817-000 PROJECT NAME: ACCESS AND HAIL ROUTE PROJECT LOCATION: MT. VERNON, WASHINGTON
-------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------

SHIFT IN
CS101

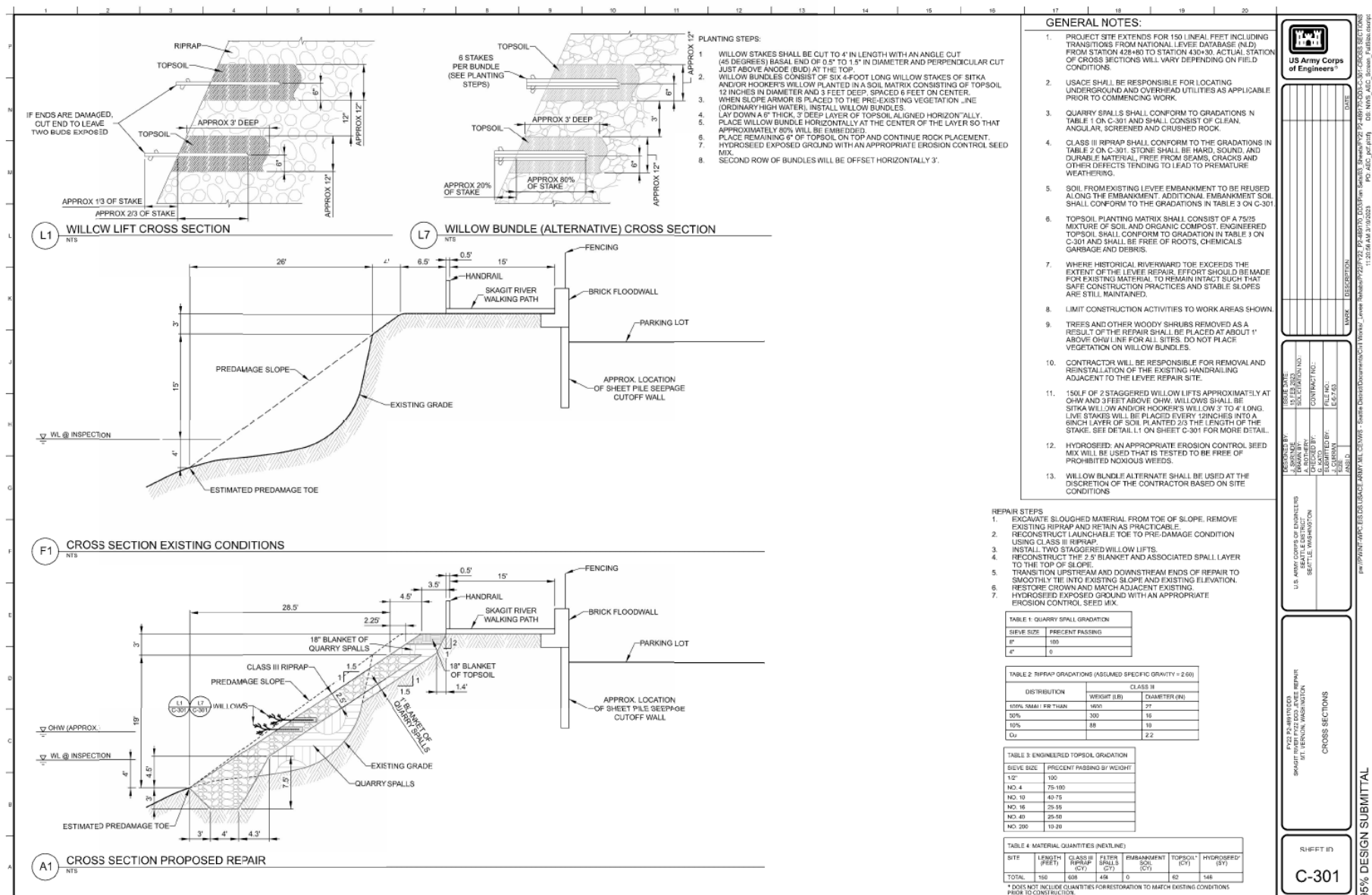


A1 SITE PLAN
1" = 20'

GENERAL NOTES:

1. STATIONING DERIVED FROM THE NATIONAL LEVEE DATABASE (NLD). LEVEE REHAB FROM STA 428+00 TO 430+30.
2. EDGES ON LEVEE REPAIR MUST TRANSITION SMOOTHLY TO EXISTING SURROUNDINGS.
3. ALL IN WATER WORK SHALL OCCUR BETWEEN JUNE 15 TO AUGUST 31 TO MINIMIZE ECOLOGICAL IMPACT TO WILDLIFE HABITAT.
4. STAGING ACTIVITIES WILL BE CONTAINED WITHIN THE SITE LIMITS AND ALL DISTURBED AREAS WILL BE HYDROSEED AFTER CONSTRUCTION WORK IS COMPLETED.

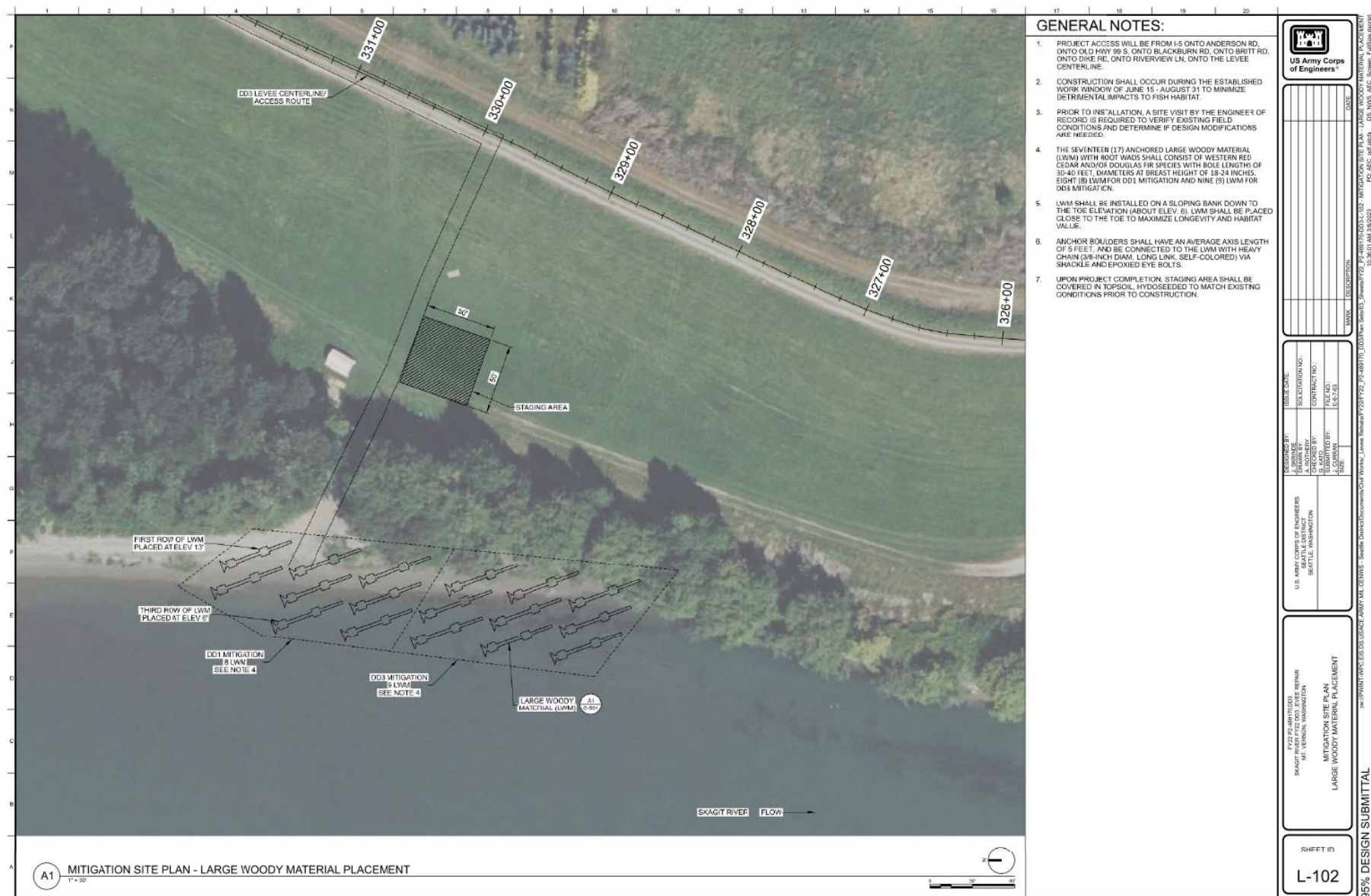
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PREPARED BY: US ARMY CORPS OF ENGINEERS DESIGNED BY: SEATTLE DISTRICT CHECKED BY: SEATTLE DISTRICT DATE: 10/20/2023	
REVISIONS: NO. DESCRIPTION 1. 10/20/2023	
95% DESIGN SUBMITTAL	





- GENERAL NOTES:**
1. PROJECT ACCESS WILL BE FROM I-5 ONTO ANDERSON RD, ONTO OLD HWY 99 S, ONTO BLACKBURN RD, ONTO BRITT RD, ONTO DIKE RD, ONTO RIVERVIEW LN, ONTO THE LEVEE CENTERLINE.
 2. ALL IN WATER WORK SHALL OCCUR BETWEEN JUNE 15 TO AUGUST 31 TO MINIMIZE ECOLOGICAL IMPACT TO WILDLIFE HABITAT.

		DRAWN: [] DATE: [] CHECKED: [] DATE: [] DESIGNED: [] DATE: [] IN CHARGE: [] DATE: []	
PROJECT NO.: [] CONTRACT NO.: [] SHEET NO.: []		ISSUE DATE: [] SOLICITATION NO.: [] CONTRACT NO.: [] FILE NO.: [] SUBMITTED BY: [] DATE: [] SCALE: []	
PREPARED BY: U.S. ARMY CORPS OF ENGINEERS SEATTLE DISTRICT SEATTLE, WASHINGTON		PROJECT TITLE: MITIGATION ACCESS AND HAUL ROUTE	
SHEET NO. IN L-101		95% DESIGN SUBMITTAL	





US Army Corps
of Engineers®
Seattle District

FY20 P2-489172 DD12 DIKING DISTRICT 12 (DD12) LEVEE REHAB 2022 BURLINGTON, WASHINGTON



PROJECT VICINITY MAP
NTS



PROJECT LOCATION MAP
NTS

INDEX OF DRAWINGS

SHEET ID	TITLE
GENERAL	
G-001	TITLE, VICINITY MAP, PROJECT MAP, AND INDEX
CIVIL	
CS-101	ACCESS AND HAUL ROUTE
CS-102	PROJECT SITE 1 PROPOSED REPAIR
CS-103	PROJECT SITE 2 PROPOSED REPAIR
CS-104	PROJECT SITE 3 PROPOSED REPAIR
C-301	PROJECT SITE 1 TYPICAL CROSS SECTIONS
C-302	PROJECT SITE 2 TYPICAL CROSS SECTIONS
C-303	PROJECT SITE 3 TYPICAL CROSS SECTIONS

SAFETY PAYS



15 FEBRUARY 2023
Date: 09/15/2023
File No.: E-67-64

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Date: 09/15/2023
File No.: E-67-64



- GENERAL NOTES:**
1. PROJECT SITE 1 ACCESS WILL BE FROM HIGHWAY 20 ONTO PETER ANDERSON RD.
 2. STAGING ACTIVITIES WILL BE CONTAINED WITHIN THE SITE LIMITS AND ALL DISTURBED AREAS WILL BE HYDROSEEDED AFTER CONSTRUCTION WORK IS COMPLETED.
 3. CONSTRUCTION SHALL OCCUR DURING THE ESTABLISHED WORK WINDOW OF JUNE 15 - AUGUST 31 TO MINIMIZE DETRIMENTAL IMPACTS TO FISH HABITAT.



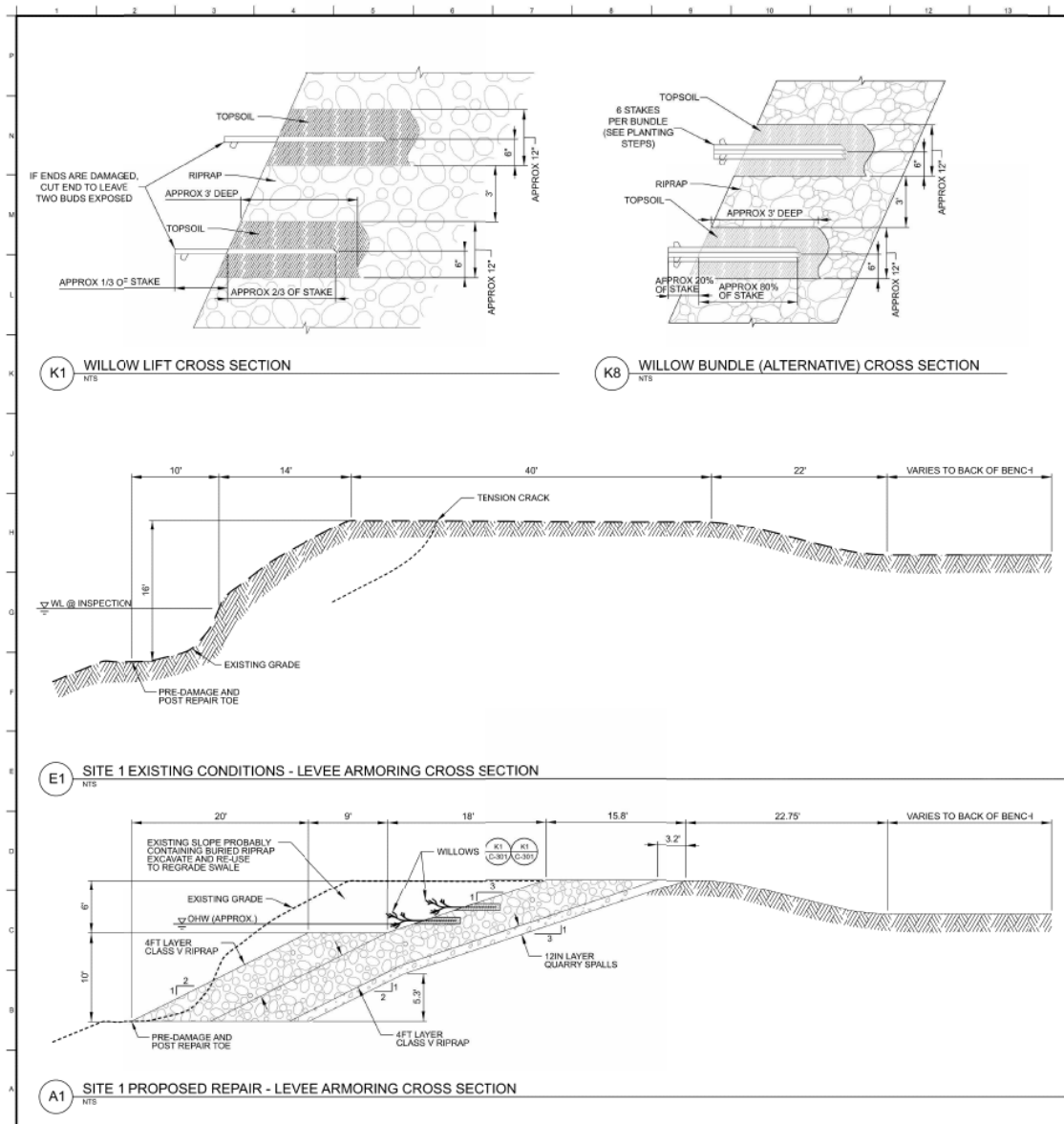
DATE	
DESIGNATION	
PROJECT NO.	
CONTRACT NO.	
DATE	
BY	
FOR	
PROJECT SITE 1 PROPOSED REPAIR	
SHEET ID	
CS102	



GENERAL NOTES:

1. PROJECT SITE 3 ACCESS WILL BE FROM HIGHWAY 20 ONTO NANACORTES ST.
2. STAGING ACTIVITIES WILL BE CONTAINED WITHIN THE SITE LIMITS AND ALL DISTURBED AREAS WILL BE HYDROSEED AFTER CONSTRUCTION WORK IS COMPLETED.
3. CONSTRUCTION SHALL OCCUR DURING THE ESTABLISHED WORK WINDOW OF JUNE 15 - AUGUST 31 TO MINIMIZE DETRIMENTAL IMPACTS TO FISH HABITAT.

		DATE	
DESIGNED BY: U.S. ARMY CORPS OF ENGINEERS WASHINGTON, WASHINGTON PROJECT NO.: 13R-28-P4-3002023		ISSUE DATE: 01/11/2023	
		CONTRACT NO.: 13R-28-P4-3002023	
PROJECT SITE 3 PROPOSED REPAIR		SHEET NO.: 13R-28-P4-3002023	
		SHEET ID: CS104	



GENERAL NOTES:

- PROJECT SITE EXTENDS FOR 800 LINEAL FEET INCLUDING TRANSITIONS FROM NATIONAL LEVEE DATABASE (NLD) FROM STATION 297+00 TO STATION 365+00. ACTUAL STATION OF CROSS SECTIONS WILL VARY DEPENDING ON FIELD CONDITIONS.
- USACE SHALL BE RESPONSIBLE FOR LOCATING UNDERGROUND AND OVERHEAD UTILITIES AS APPLICABLE PRIOR TO COMMENCING WORK.
- QUARRY SPALLS SHALL CONFORM TO GRADATIONS IN TABLE 2 ON C-301 AND SHALL CONSIST OF CLEAN, ANGULAR, SCREENED AND CRUSHED ROCK.
- CLASS V RIPRAP SHALL CONFORM TO THE GRADATIONS IN TABLE 2 ON C-301. STONE SHALL BE HARD, SOUND, AND DURABLE MATERIAL, FREE FROM SEAMS, CRACKS AND OTHER DEFECTS TENDING TO LEAD TO PREMATURE WEATHERING.
- TOPSOIL PLANTING MATRIX SHALL CONSIST OF A 75/25 MIXTURE OF SOIL AND ORGANIC COMPOST. ENGINEERED TOPSOIL SHALL CONFORM TO GRADATION IN TABLE 3 ON C-301 AND SHALL BE FREE OF ROOTS, CHEMICALS, GARBAGE AND DEBRIS.
- WHERE HISTORICAL RIVERWARD TOE EXCEEDS THE EXTENT OF THE LEVEE REPAIR, EFFORT SHOULD BE MADE FOR EXISTING MATERIAL TO REMAIN INTACT SUCH THAT SAFE CONSTRUCTION PRACTICES AND STABLE SLOPES ARE STILL MAINTAINED.
- LIMIT CONSTRUCTION ACTIVITIES TO WORK AREAS SHOWN.
- 800LF OF 2 STAGGERED WILLOW LIFTS OR BUNDLES APPROXIMATELY 4' AT OHW AND 3 FEET ABOVE OHW. WILLOWS SHALL BE SITKA WILLOW AND/OR HOOKER'S WILLOW 3" TO 1" LONG. FOR WILLOW LIFTS, LIVE STAKES WILL BE PLACED EVERY 12 INCHES INTO A BUNCH LAYER OF SOIL PLANTED 2/3 THE LENGTH OF THE STAKE. SEE DETAIL K1 ON SHEET C-301 FOR MORE DETAIL. FOR WILLOW BUNDLES, 6 LIVE STAKES WILL BE PLACED PER BUNDLE EVERY 6" INTO A BUNCH LAYER OF SOIL PLANTED APPROXIMATELY 85% OF THE LENGTH OF THE STAKE. SEE DETAIL K8 ON SHEET C-301 FOR MORE DETAIL.
- HYDROSEED: AN APPROPRIATE EROSION CONTROL SEED MIX WILL BE USED THAT IS TESTED TO BE FREE OF PROHIBITED NOXIOUS WEEDS.
- WILLOW BUNDLE ALTERNATE SHALL BE USED AT THE DISCRETION OF THE CONTRACTOR BASED ON SITE CONDITIONS.

PLANTING STEPS:

- WILLOW STAKES SHALL BE CUT TO 4' IN LENGTH WITH AN ANGLE CUT (45 DEGREES) BASAL END OF 0.5" TO 1.5" IN DIAMETER AND PERPENDICULAR CUT JUST ABOVE A NODE (EUD) AT THE TOP.
- WILLOW BUNDLES CONSIST OF SIX 4-FOOT LONG WILLOW STAKES OF SITKA AND/OR HOOKER'S WILLOW PLANTED IN A SOIL MATRIX CONSISTING OF TOPSOIL 12 INCHES IN DIAMETER AND 3 FEET DEEP, SPACED 6 FEET ON CENTER.
- WHEN SLOPE ARMOR IS PLACED TO THE PRE-EXISTING VEGETATION LINE (ORDINARY HIGH WATER), INSTALL WILLOW BUNDLES.
- LAY DOWN A 6" THICK, 3" DEEP LAYER OF TOPSOIL ALIGNED HORIZONTALLY.
- PLACE WILLOW BUNDLE HORIZONTALLY AT THE CENTER OF THE LAYER SO THAT APPROXIMATELY 80% WILL BE EMBEDDED.
- PLACE REMAINING 6" OF TOPSOIL ON TOP AND CONTINUE ROCK PLACEMENT.
- HYDROSEED EXPOSED GROUND WITH AN APPROPRIATE EROSION CONTROL SEED MIX. SECOND ROW OF BUNDLES WILL BE OFFSET HORIZONTALLY 3'.

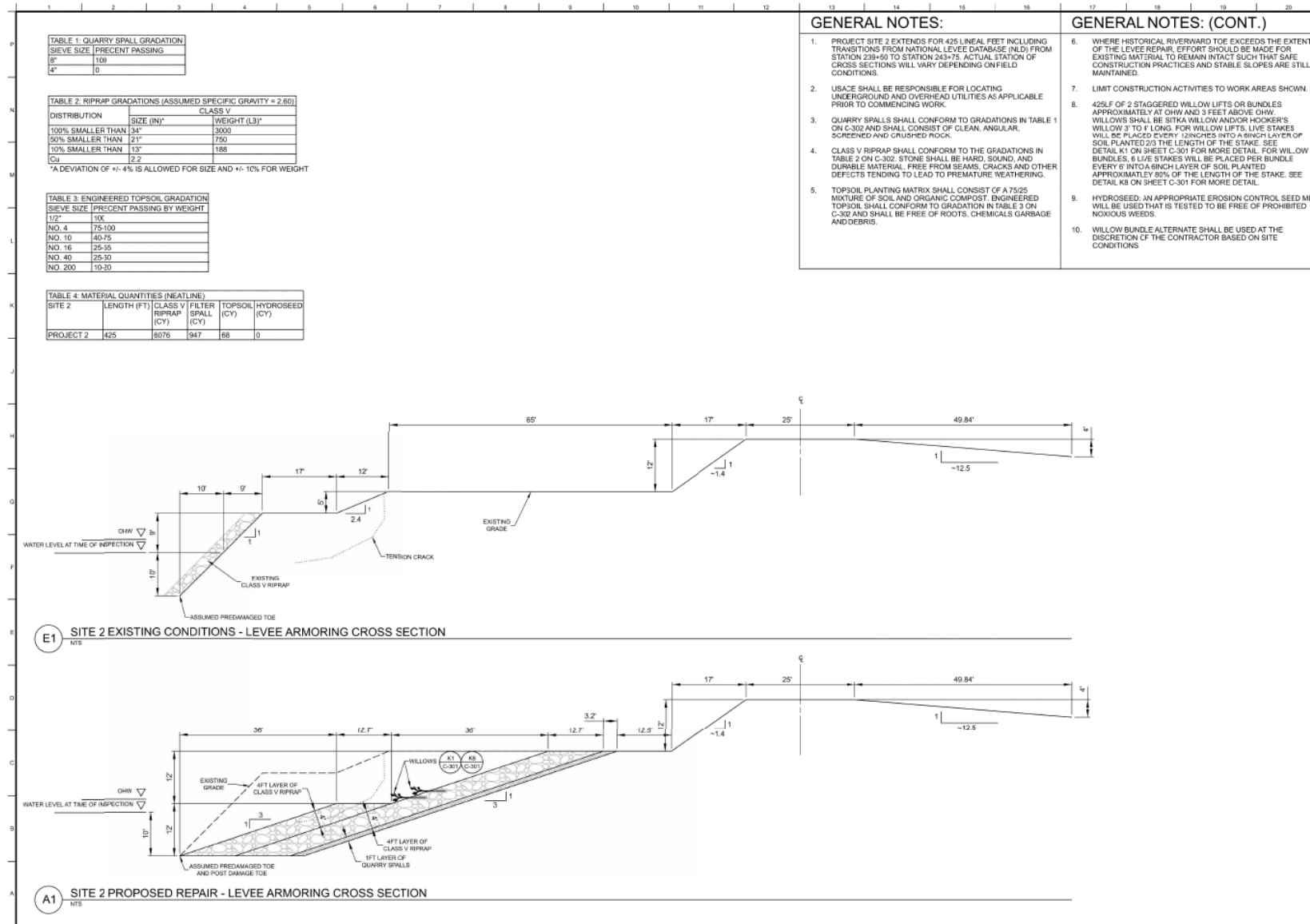
SEIVE SIZE	PERCENT PASSING
10"	100
4"	0

DISTRIBUTION	SIZE (IN)	CLASS V WEIGHT (LB)
100% SMALLER THAN	34	3500
50% SMALLER THAN	21	750
10% SMALLER THAN	13	188
Cu	2.2	

SEIVE SIZE	PERCENT PASSING BY WEIGHT
1/2"	100
NO. 4	75-100
NO. 10	40-75
NO. 16	25-65
NO. 40	20-50
NO. 200	10-20

SITE	LENGTH (FEET)	CLASS V RIPRAP (CY)	TOPSOIL (CY)	HYDROSEED (GALLONS)
PROJECT 1	800	7793	1522	183

		DATE: 12/14/2023 DRAWN BY: J. J. JENSEN CHECKED BY: J. J. JENSEN SUBMITTED BY: J. J. JENSEN DATE: 12/14/2023	
		PROJECT NO.: 12012-01-001 CONTRACT NO.: 12012-01-001 FILE NO.: E-2-04 SHEET NO.: 12012-01-001	
U.S. ARMY CORPS OF ENGINEERS WASHINGTON FIELD OFFICE WASHINGTON, DC 20315-5000		PROJECT SITE 1 TYPICAL CROSS SECTIONS	
SHEET NO. 12012-01-001 OF 12012-01-001		SHIFT IN C-301	



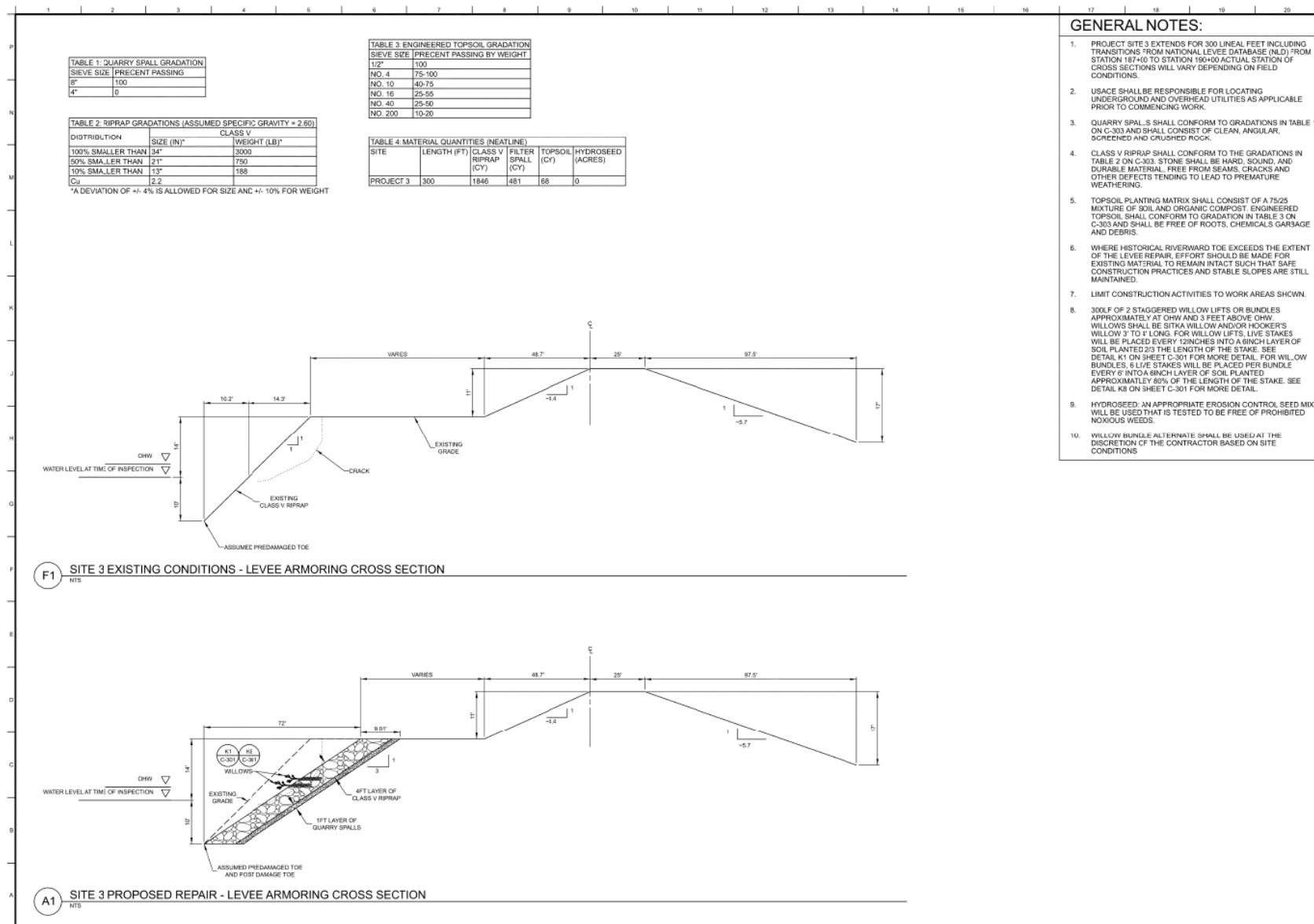
US Army Corps of Engineers

DESIGNED BY: [blank]
 DRAWN BY: [blank]
 CHECKED BY: [blank]
 IN CHARGE: [blank]
 DATE: [blank]

PROJECT NO.: [blank]
 CONTRACT NO.: [blank]
 SHEET NO.: [blank]
 OF [blank]

PROJECT SITE 2
 TYPICAL CROSS SECTIONS

SHEET IN
C-302



GENERAL NOTES:

- PROJECT SITE 3 EXTENDS FOR 300 LINEAL FEET INCLUDING TRANSITIONS FROM NATIONAL LEVEE DATABASE (NLD) FROM STATION 187+00 TO STATION 190+00 ACTUAL STATION OF CROSS SECTIONS WILL VARY DEPENDING ON FIELD CONDITIONS.
- USACE SHALL BE RESPONSIBLE FOR LOCATING UNDERGROUND AND OVERHEAD UTILITIES AS APPLICABLE PRIOR TO COMMENCING WORK.
- QUARRY SPALLS SHALL CONFORM TO GRADATIONS IN TABLE 1 ON C-303 AND SHALL CONSIST OF CLEAN, ANGULAR, SCREENED AND CRUSHED ROCK.
- CLASS V RIPRAP SHALL CONFORM TO THE GRADATIONS IN TABLE 2 ON C-303. STONE SHALL BE HARD, SOUND, AND DURABLE MATERIAL, FREE FROM SEAMS, CRACKS AND OTHER DEFECTS TENDING TO LEAD TO PREMATURE WEATHERING.
- TOPSOIL PLANTING MATRIX SHALL CONSIST OF A 75/25 MIXTURE OF SOIL AND ORGANIC COMPOST. ENGINEERED TOPSOIL SHALL CONFORM TO GRADATION IN TABLE 3 ON C-303 AND SHALL BE FREE OF ROOTS, CHEMICALS, GARBAGE AND DEBRIS.
- WHERE HISTORICAL RIVERWARD TOE EXCEEDS THE EXTENT OF THE LEVEE REPAIR, EFFORT SHOULD BE MADE FOR EXISTING MATERIAL TO REMAIN INTACT SUCH THAT SAFE CONSTRUCTION PRACTICES AND STABLE SLOPES ARE STILL MAINTAINED.
- LIMIT CONSTRUCTION ACTIVITIES TO WORK AREAS SHOWN.
- 300LF OF 2 STAGGERED WILLOW LIFTS OR BUNDLES APPROXIMATELY AT OHW AND 3 FEET ABOVE OHW. WILLOWS SHALL BE SITKA WILLOW AND/OR HOOKER'S WILLOW 3' TO 4' LONG. FOR WILLOW LIFTS, LIVE STAKES WILL BE PLACED EVERY 12 INCHES INTO A BINCH LAYER OF SOIL PLANTED 2/3 THE LENGTH OF THE STAKE. SEE DETAIL K1 ON SHEET C-301 FOR MORE DETAIL. FOR WILLOW BUNDLES, 6 LIVE STAKES WILL BE PLACED PER BUNDLE EVERY 6' INTO A BINCH LAYER OF SOIL PLANTED APPROXIMATELY 80% OF THE LENGTH OF THE STAKE. SEE DETAIL K3 ON SHEET C-301 FOR MORE DETAIL.
- HYDROSEED, AN APPROPRIATE EROSION CONTROL, SEED MIX WILL BE USED THAT IS TESTED TO BE FREE OF PROHIBITED NOXIOUS WEEDS.
- WILLOW BUNDLE ALTERNATE SHALL BE USED AT THE DISCRETION OF THE CONTRACTOR BASED ON SITE CONDITIONS.

US Army Corps of Engineers

DATE

DESIGNATION

MAP

DESIGNED BY: [Blank]

CHECKED BY: [Blank]

DATE: [Blank]

CONTRACT NO.: [Blank]

FILE NO.: [Blank]

DATE: [Blank]

U.S. ARMY CORPS OF ENGINEERS

SEATTLE DISTRICT

SEATTLE, WASHINGTON

PROJECT SITE 3

TYPICAL CROSS SECTIONS

SHIFT: [Blank]

DATE: [Blank]

PROJECT SITE 3

TYPICAL CROSS SECTIONS

SHIFT: [Blank]

DATE: [Blank]

PROJECT SITE 3

TYPICAL CROSS SECTIONS

APPENDIX C – WATER QUALITY MONITORING PLAN

WATER QUALITY MONITORING PLAN

Water quality monitoring will occur during in-water sediment-generating activities. Each new type of sediment generating activity will be monitored.

Sediment-Generating Activities Triggering Monitoring Efforts

Activities that trigger monitoring efforts include but are not limited to the following:

- In-water toe or bank excavation,
- Rock placement for toe rock, and
- Rock placement for bank construction.

Monitoring Frequency/Duration

- Point of Compliance monitoring will occur once per hour for the first three hours after the start of each new sediment-generating activity and then once every three hours, if no exceedance is noted, until the end of the workday.
- The following will be taken at the same frequency as the Point of Compliance samples:
 - a. Early Warning sample
 - b. Background sample
- If, after a minimum of one full day, the monitoring results verify that turbidity levels from a certain sediment-generating activity are remaining consistently below the stated water quality standards, physical monitoring (measurement of parameters using an instrument), may be reduced or stopped for that activity. Physical monitoring will be resumed during new sediment-generating activities or if precipitation events or any other changes will result in higher or lower project-related turbidity. Sampling will resume if visual monitoring indicates possible exceedance at the Early Warning or Point of Compliance sample locations. BMPs will be evaluated to see if additional steps can be taken to reduce and control turbidity.
- Visual monitoring will be done continuously for all in-water work.
- Maximum turbidity levels will meet standards in WAC 173-201A-200. Turbidity must not exceed 5 NTU over background when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.

Sampling Locations

Sampling locations are located at the following points:

- Background – 300 feet upstream of the repair site or the closest safe accessible location.
- Early Warning – 150 feet downstream of the project site.
- Point of Compliance – 300 feet downstream of the project site.

Sampling Procedures

All water quality monitoring results (visual and physical) will be recorded on the monitoring form (Attachment B). The Corps will keep all project monitoring forms on file and all sample results

will be submitted to the Ecology Federal Permit Manager/Coordinator per the frequency specified in the 401 (if applicable).

Water samples will be collected and analyzed for the appropriate parameters, per the monitoring frequency described above, following the equipment and sampling guidelines below:

- Continuous visual monitoring will occur to identify the presence of oil or grease on the water's surface.
- Turbidity will be monitored using a Hach turbidimeter or equivalent.
- The onsite Corps Biologist or Quality Construction Assurance Personnel will conduct the water quality monitoring.
- A portable turbidity meter will be used in the field. A representative sample should accurately reflect the true condition of the water source from which the sample was taken. The following protocol will be used to ensure a representative sample is analyzed:
 - Use a clean container to obtain a sample from the source.
 - Collect the sample with care to avoid disturbance of sediments and collecting surface contaminants.
 - Gently but thoroughly mix the sample before pouring it into the small vial used to read the sample in the turbidimeter.
 - Without allowing the sample to settle, take turbidity reading according to turbidimeter manufacturer's instructions.
 - Several measurements can be taken, with the average used as the data for comparison.

A calibration check of the turbidimeter using secondary standards will be carried out regularly (at least once per week). The instrument will be recalibrated using primary standards at least once every 3 months, or more frequently when a calibration check indicates there is a problem. The manufacturer's calibration procedures will be followed.

Turbidity Exceedances and Exceedance Protocol

If measurements taken at the Point of Compliance show one of the following, the sample shall be recorded as an exceedance:

- turbidity sample exceeds 5 NTU over background when the background turbidity is 50 NTU or less.
- turbidity sample shows a 10 percent increase in turbidity over background when the background turbidity is more than 50 NTU.

The Corps will take the following steps after an exceedance is detected:

Step 1: Verification

- If monitoring indicates an exceedance, the Corps shall collect, within ten (10) minutes of the initial reading, another reading in the same location.
- If the exceedance still exists, the Corps shall photograph conditions at the POC and then collect another series of readings at the Background sample location to

determine if the exceedance is caused by the project or by a change in background conditions (for example due to a heavy rainfall event).

- The Corps will modify sediment-generating activities to reduce turbidity and increase monitoring (see Step 2).

Step 2: Increased Monitoring

- The Corps shall collect another reading no more than one (1) hour after the exceedance is recorded to verify the construction activity or material placement operation has been modified to eliminate the exceedance and return conditions to levels within the acceptable limits.
- If this second reading, taken one (1) hour later, still shows an exceedance, the Corps will implement additional BMPs and evaluate additional alterations to the project to minimize turbidity.
- The Corps shall collect a third reading taken no more than two (2) hours after the first exceedance is recorded.

Step 3: Stop Sediment-Generating Activities

- If the third reading, taken two (2) hours after the initial exceedance, still shows an exceedance, the Corps will stop sediment-generating activities.
- The Corps will provide monitoring data to the Washington State Department of Ecology (Ecology) and notify it that there was an exceedance within 24 hours of stopping work.

Step 4: Continued Sampling Until Compliance is Achieved

- After work is stopped, the Corps shall collect additional samples at hourly intervals until water quality levels return to background.
- Once compliance has again been achieved, the Corps will resume work and follow the Sampling Procedures outlined above.

Oil/Grease Exceedances and Exceedance Protocol

The Corps will take the following steps if visual monitoring identifies the presence of oil or grease on the water's surface.

Step 1: Stop and Contain

- The Corps will stop work and initiate containment and cleanup efforts.
- Equipment will be inspected to determine the source of the oil or grease.
- Equipment that is the source of the spill or leak will immediately be removed from the site.

Step 2: Report

The following entities will be contacted immediately in the event of an oil or grease spill.

- Ecology
 - Washington Emergency Management Division, 1-800-258-5990
 - Additional details available online: <https://ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue/Report-a-spill>
 - Ecology's Regional Spill Response Office
- U.S. Environmental Protection Agency
 - National Response Center, 1-800-424-8802
- Washington Department of Fish and Wildlife
 - Oil and Spill Prevention Response, 1-800-258-5990

Step 3: Resume Work

- Once the spill or leak has been responded to, the Corps will resume work and continuous visual monitoring.
- Equipment that caused the spill or leak will be removed from the project site to be repaired. The equipment must be repaired and cleaned before allowed back to the project site.

APPENDIX D – ENVIRONMENTAL JUSTICE ANALYSIS

5 miles Ring around the Area, WASHINGTON, EPA Region 10

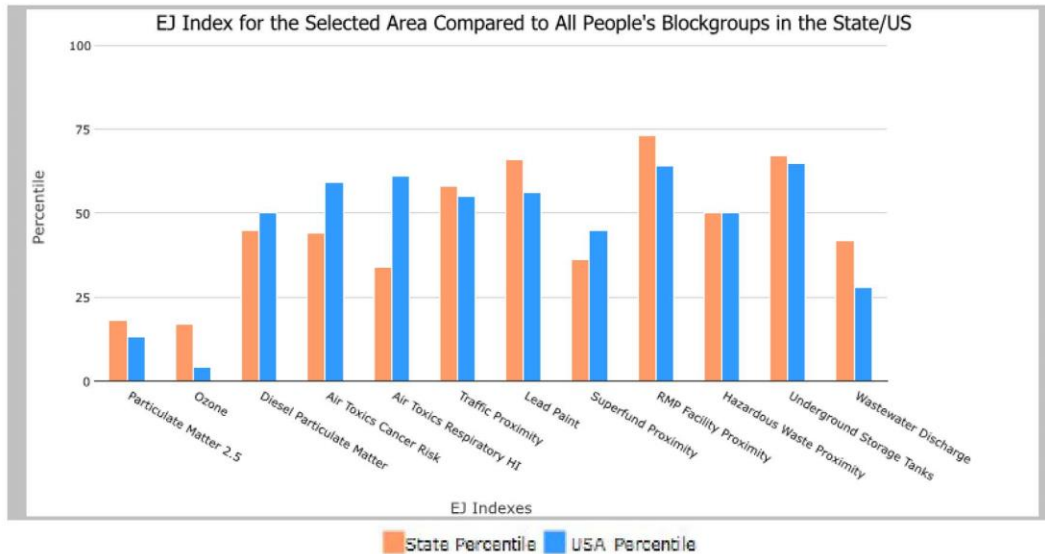
Approximate Population: 82,312

Input Area (sq. miles): 190.83

Skagit Levees DD 1,3, & 12

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
Particulate Matter 2.5 EJ index	18	13
Ozone EJ index	17	4
Diesel Particulate Matter EJ index*	45	50
Air Toxics Cancer Risk EJ index*	44	59
Air Toxics Respiratory HI EJ index*	34	61
Traffic Proximity EJ index	58	55
Lead Paint EJ index	66	56
Superfund Proximity EJ index	36	45
RMP Facility Proximity EJ index	73	64
Hazardous Waste Proximity EJ index	50	50
Underground Storage Tanks EJ index	67	65
Wastewater Discharge EJ index	42	28

EJ Indexes - The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.



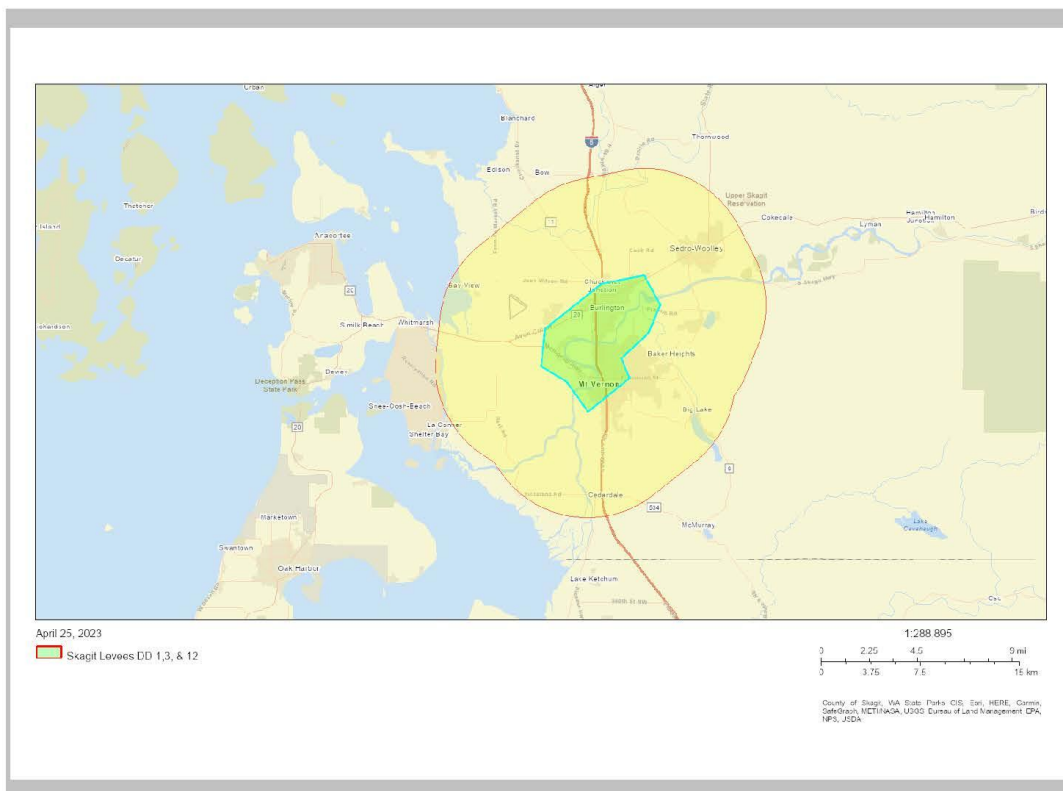
*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: <https://www.epa.gov/haps/air-toxics-data-update>.

5 miles Ring around the Area, WASHINGTON, EPA Region 10

Approximate Population: 82,312

Input Area (sq. miles): 190.83

Skagit Levees DD 1,3, & 12



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	5



EJScreen Report (Version 2.11)



5 miles Ring around the Area, WASHINGTON, EPA Region 10

Approximate Population: 82,312

Input Area (sq. miles): 190.83

Skagit Levees DD 1,3, & 12

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)	6.37	7.85	10	8.67	7
Ozone (ppb)	30.5	35.3	10	42.5	3
Diesel Particulate Matter* ($\mu\text{g}/\text{m}^3$)	0.193	0.334	30	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	30	35	47	28	80-90th
Air Toxics Respiratory HI*	0.4	0.51	32	0.36	80-90th
Traffic Proximity (daily traffic count/distance to road)	430	740	61	760	63
Lead Paint (% Pre-1960 Housing)	0.27	0.22	66	0.27	54
Superfund Proximity (site count/km distance)	0.035	0.18	23	0.13	32
RMP Facility Proximity (facility count/km distance)	0.81	0.64	74	0.77	70
Hazardous Waste Proximity (facility count/km distance)	0.6	2.2	43	2.2	47
Underground Storage Tanks (count/km ²)	4.8	6.3	67	3.9	76
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00093	0.021	85	12	48
Socioeconomic Indicators					
Demographic Index	30%	28%	61	35%	50
Supplemental Demographic Index	13%	12%	67	15%	53
People of Color	32%	33%	60	40%	53
Low Income	27%	24%	62	30%	49
Unemployment Rate	5%	5%	62	5%	59
Limited English Speaking Households	4%	4%	69	5%	70
Less Than High School Education	12%	8%	75	12%	62
Under Age 5	6%	6%	62	6%	63
Over Age 64	18%	15%	63	16%	60
Low Life Expectancy	19%	18%	58	20%	44

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

April 25, 2023

3/4

5 miles Ring around the Area, WASHINGTON, EPA Region 10

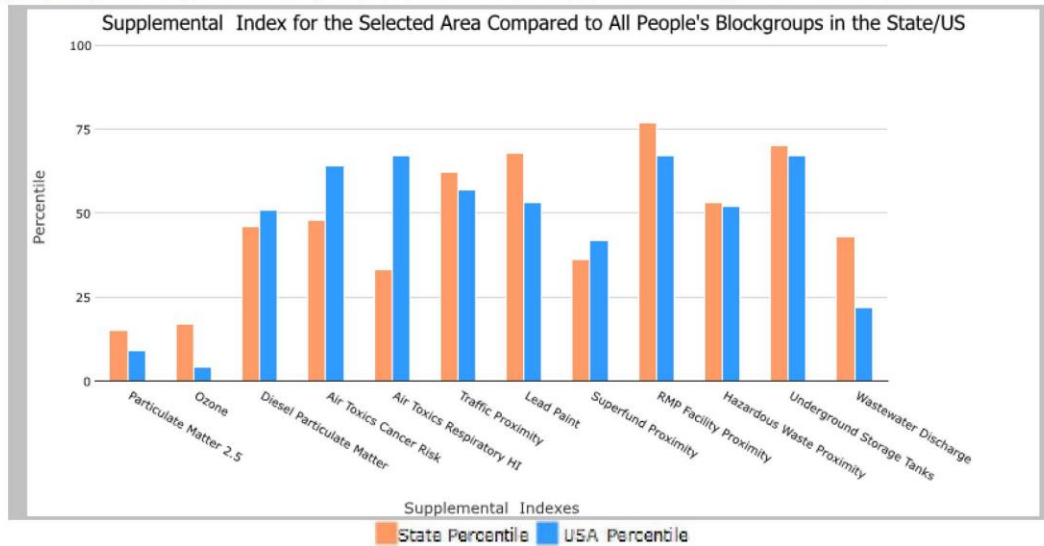
Approximate Population: 82,312

Input Area (sq. miles): 190.83

Skagit Levees DD 1,3, & 12

Selected Variables	State Percentile	USA Percentile
Supplemental Indexes		
Particulate Matter 2.5 Supplemental Index	15	9
Ozone Supplemental Index	17	4
Diesel Particulate Matter Supplemental Index*	46	51
Air Toxics Cancer Risk Supplemental Index*	48	64
Air Toxics Respiratory HI Supplemental Index*	33	67
Traffic Proximity Supplemental Index	62	57
Lead Paint Supplemental Index	68	53
Superfund Proximity Supplemental Index	36	42
RMP Facility Proximity Supplemental Index	77	67
Hazardous Waste Proximity Supplemental Index	53	52
Underground Storage Tanks Supplemental Index	70	67
Wastewater Discharge Supplemental Index	43	22

Supplemental Indexes - The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on low-income, limited English speaking, less than high school education, unemployed, and low life expectancy populations with a single environmental indicator.



This report shows the values for environmental and demographic indicators, EJScreen indexes, and supplemental indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. For additional information, see: www.epa.gov/environmentaljustice.

April 25, 2023

4/4

APPENDIX E - CLEAN WATER ACT COMPLIANCE

Clean Water Act Exemption:

CENWS-PMP

26 April 2023

MEMORANDUM FOR RECORD

SUBJECT: Clean Water Act (CWA) Section 404 Exemption Determination for Skagit Diking Districts (DD)1, 3, and 12 (Site 3) Levee Rehabilitation Projects

1. This memorandum summarizes the Corps' determination that the discharge of dredged or fill material into waters of the United States (U.S.), including wetlands, associated with repairs to the DD 1, 3, and 12 (Site 3) levees are exempt from regulation under Section 404 of the CWA consistent with 33 U.S.C. 1344 f(1)(b) and agency implementing regulations 33 CFR 323.4(a)(2) (the "maintenance exemption" or "404(f)(1)(B) exemption").
2. The Corps is responsible for the compliance of its civil works projects with Sections 401 and 404 under the CWA. Section 404 (f)(1)(B) of the CWA provides a list of certain categories of work that are exempt from the general regulatory requirements and are not prohibited from discharging dredged or fill material under certain specific circumstances, including, but not limited to, the maintenance exemption.
 - a. The maintenance exemption applies when the discharge of dredged or fill material is:

"[F]or the purpose of maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures."
 - b. The Maintenance Exemption does not apply under certain circumstances, such as:
 - 1) When the discharge of dredged or fill material contains a toxic pollutant listed under Section 307 of the CWA, (33 USC 1344 (f)(1)), or
 - 2) When the discharge of dredged or fill material is incidental to an activity whose purpose is to convert an area regulated under the CWA into a use to which it was not previously subject, where the flow or circulation of regulated waters under the CWA may be impaired or the reach of such waters is reduced. (33 USC 1344 (f)(2) & 33 CFR 323.4(c)), or
 - 3) When the modification "changes the character, scope, or size of the original fill design." (33 CFR 323.4(a)(2)).
 - c. "Emergency reconstruction must occur within a reasonable period of time after damage occurs in order to qualify for this exemption." (33 CFR 323.4(a)(2)).
3. The Corps has reviewed the DD 1, 3, and 12 Levee Rehabilitation Project and has determined that the proposed levee repairs to DD 1, 3, and 12 Site 3 do not include fill regulated under Section 404 CWA because the repair meet the parameters of the maintenance exemption under Section 404(f)(1)(B).

4. The repairs consist of one levee repair at DD 1, one levee repair at DD 3 and one levee repair at DD 12 Site 3. For purposes of this analysis, the focus is on the portion of the original fill material /structure that is potentially jurisdictional under Section 404 of the CWA (below and waterward of the vertical and horizontal planes of Ordinary High Water (OHW) for discharges of dredged and fill material in non-tidally influenced waters). A comparison was made between the proposed work and the original fill design to determine whether there is a change to the character, scope, and size of the fill, taking into consideration the type of material that was within the original footprint. The DD 1 and DD 3 repairs will be within the pre-damaged footprint with no further riverward encroachment. The repairs to DD 12 site 3 will be a slope layback with no further riverward encroachment and a decrease in fill below and waterward of OHW. For the layback, although the fill amount below and waterward of OHW will change, the volume and footprint of the fill will not exceed that of the original design. The proposed discharge of dredge and fill material for this project remains within the same prism, profile, and footprint of the original project and is replacing a rock armor layer with another rock armor layer. As such, the discharge does not present a change in the character, scope, or size of the original fill design. The proposed project does not use materials that would otherwise be considered excluded from the maintenance exemption (e.g., toxic materials), nor is the discharge associated with an activity whose purpose is to convert an area of waters of the U.S. into a use to which it was not previously subject. The discharge will not result in a conversion of a Section 404 wetland into dry land, and will not reduce the reach or alter the flow or circulation of waters of the U.S.
5. Therefore, repairs to these three levee sites are not subject to regulation under Section 404 of the CWA. The proposed project does not include fill requiring consideration under Section 404. Because the projects do not result in any jurisdictional discharge into waters of the U.S., Section 401 Water Quality Certification is not required.

Caren Crandell
Clean Water Act Coordinator
Planning, Environmental, and
Cultural Resources Branch

APPENDIX F - ENDANGERED SPECIES ACT COORDINATION



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

Refer to NMFS No.:
WCRO-2021-00710

November 8, 2021

Laura Boerner
Chief, Planning, Environmental and Cultural Resources Branch
U.S. Army Corps of Engineers, Seattle District
P.O. Box 3755
Seattle, Washington 98124

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens
Fishery Conservation and Management Act Essential Fish Habitat Response for the
Skagit Diking District 3 and 12 Levees Rehabilitation of Flood Control Works, Skagit
County, Washington

Dear Ms. Boerner:

Thank you for your letter of March 30, 2021, requesting initiation of formal consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the PL84-99 repair of two sections of levee in Skagit County, Washington. We initiated formal consultation on April 30, 2021.

The enclosed document contains a biological opinion prepared by NMFS pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of the levee repair project in the Skagit River in the vicinity of the Cities of Burlington and Mount Vernon. In this Opinion, the NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Puget Sound Chinook salmon, Puget Sound steelhead, or result in the destruction or adverse modification of designated critical habitat for these species. This document also documents our conclusion that the proposed action is not likely to adversely affect Southern Resident killer whales (SRKW) and their designated critical habitat.

As required by section 7 of the Endangered Species Act, the National Marine Fisheries Service provided an incidental take statement with the biological opinion. The incidental take statement describes reasonable and prudent measures the National Marine Fisheries Service considers necessary or appropriate to minimize incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions. Incidental take from actions that meet the term and condition will be exempt from the Endangered Species Act take prohibition.

WCRO-2021-00710



Per your request, NMFS also reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)), and concluded that the action would adversely affect the EFH of Coho, Chinook, and Pink salmon. Therefore, we have included the results of that review in Section 3 of this document. Section 305(b) (4) (B) of the MSA requires Federal agencies to provide a detailed written response to the National Marine Fisheries Service within 30 days after receiving these recommendations.

If the response is inconsistent with the Essential Fish Habitat conservation recommendation, the U.S. Army Corps of Engineers must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall Essential Fish Habitat program effectiveness by the Office of Management and Budget, the National Marine Fisheries Service established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each Essential Fish Habitat consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the Essential Fish Habitat portion of this consultation, we ask that you clearly identify the number of conservation recommendations accepted.

Please contact Janet Curran, consulting biologist at the Oregon Washington Coastal Office (janet.curran@noaa.gov), if you have any questions concerning this consultation, or if you require additional information.

Sincerely,



Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: Amanda Ogden, USACE
Fred Goetz, USACE

WCRO-2021-00710

Reasonable and Prudent Measures & Terms and Conditions from NMFS Biological Opinion WCRO-2021-00710

2.9.3 Reasonable and Prudent Measures

“Reasonable and prudent measures” are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). The USACE and applicant shall minimize incidental take by:

1. Minimize incidental take from construction and long-term habitat alteration;
2. Monitor and adaptively manage riparian plantings for a period of three years to ensure 80 percent survival of the total number of plantings installed.

2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the USACE or any applicant must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The USACE or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. To implement RPM No. 1, the USACE shall submit as-built reports with pictures for the repairs within 60 days following completion of construction.
2. To implement RPM No. 2, the USACE shall submit a report to NMFS detailing the first year of monitoring by December 31, 2022 documenting survival of riparian plantings at or above 80 percent. If, after the first year less than 80 percent of plantings survive, replant, monitor, and report survival the second year to NMFS by December 31, 2023. Report survival by December 31, 2024 for the final result.



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT
4735 EAST MARGINAL WAY SOUTH, BLDG 1202
SEATTLE, WA 98134-2388

March 14, 2023

Planning, Environmental, and Cultural Resources Branch

Mr. Kim Kratz
Assistant Regional Administrator
Oregon Washington Coastal Office
National Marine Fisheries Service
1201 NE Lloyd Blvd, Suite 1100
Portland, OR 97232

Dear Sir:

The Seattle District, U.S. Army Corps of Engineers (USACE) has prepared an amendment to the Skagit Diking District 3 and 12 Levees Rehabilitation of Flood Control Works biological assessment submitted in March 2021 (BA amendment; enclosed).

The USACE sent the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) a BA on March 20, 2021, for repairs to the Skagit County Diking Districts (DD) 3 and 12 levees on the Skagit River in Skagit County, Washington. On November 8, 2021, the USACE received a biological opinion (BiOp) from NMFS (WCRO-2021-00710). Consultation with USFWS has not been completed.

Shortly after receipt of the NMFS biological opinion and before the permanent repairs could be implemented, the USACE responded to widespread flooding in the Skagit River basin. As part of the response, the USACE completed emergency flood fight activities at the DD 3 and DD 12 levees. The flooding caused further damage to the levees requiring modifications to the work consulted on previously. Flooding also damaged a portion of the DD 1 levee. As the scope of the levee repairs has changed, USACE is reinitiating formal consultation for this proposed federal action. Repairs to the Skagit Levees are authorized by Public Law 84-99 (33 U.S.C. Section 701n). The USACE's repair work under this authority is limited to the repair of flood control works damaged or destroyed by floods. The statute authorizes rehabilitation to the level of protection exhibited by the flood control work prior to the damaging event. Skagit County DD 1, DD 3, and DD 12 are the local non-federal sponsors for the proposed levee repair projects. Repairs will restore adequate and reliable flood protection to the same level provided by the levees prior to the February 2020 and November 2021 damaging flood events. The USACE plans to repair the levees within its pre-damaged riverward footprint. In-water work will occur between June 15 and August 31.

Consultation is requested under the emergency circumstances provisions of 50 CFR 402.05, due to the urgent need to initiate and complete repairs necessitated by flood events to restore the designed level of protection against abruptly arising and thus imminent risk of loss of human life and property that would remain elevated if the repair is not completed and the damaged levee state is allowed to persist.

The USACE requests initiation of formal consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for the proposed levee repairs with transmittal of this BA amendment and requests your concurrence with our determination of effects. The USACE is also requesting consultation under the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996. The USACE's determination is that the proposed action may adversely affect Essential Fish Habitat for Pacific salmon.

If you have any questions or need additional information, Ms. Kylie Webb is the Environmental Coordinator for this project and can be reached at (206) 764-5531 or kylie.m.webb@usace.army.mil; and Ms. Vanessa Pep, Endangered Species Coordinator, can be reached at (206) 764-5524 or vanessa.e.pepi@usace.army.mil. I may also be contacted at (206) 764-6761 or laura.a.boerner@usace.army.mil.

Sincerely,

BOERNER.LAUR
A.A.1251907443

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BOERNER.LAURA.A.1251907443
Date: 2023.03.14 13:20:10 -07'00'

Laura A. Boerner, LG, LHG
Chief, Planning, Environmental, and
Cultural Resources Branch

Enclosures

cc:

Elizabeth Babcock (NMFS)



DEPARTMENT OF THE ARMY
U.S ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT
4735 EAST MARGINAL WAY SOUTH BLDG 1202
SEATTLE, WA 98134-2388

March 14, 2023

Planning, Environmental, and Cultural Resources Branch

Mr. Brad Thompson
State Supervisor
U.S. Fish and Wildlife Service
Washington Fish and Wildlife Office
510 Desmond Dr. SE, Suite 102
Lacey, WA 98503

Dear Sir:

The Seattle District, U.S. Army Corps of Engineers (USACE) has prepared an amendment to the Skagit Diking District 3 and 12 Levees Rehabilitation of Flood Control Works biological assessment submitted in March 2021 (BA amendment is enclosed).

The USACE sent the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) a BA on March 20, 2021, for repairs to the Skagit County Diking Districts (DD) 3 and 12 levees on the Skagit River in Skagit County, Washington. On November 8, 2021, the USACE received a biological opinion (BiOp) from NMFS (WCRO-2021-00710). Consultation with USFWS has not been completed.

Shortly after receipt of the NMFS biological opinion and before the permanent repairs could be implemented, the USACE responded to widespread flooding in the Skagit River basin. As part of the response, the USACE completed emergency flood fight activities at the DD 3 and DD 12 levees. The flooding caused further damage to the levees requiring modifications to the work consulted on previously. Flooding also damaged a portion of the DD 1 levee. As the scope of the levee repairs has changed, USACE is reinitiating formal consultation for this proposed federal action. Repairs to the Skagit Levees are authorized by Public Law 84-99 (33 U.S.C. Section 701n). The USACE's repair work under this authority is limited to the repair of flood control works damaged or destroyed by floods. The statute authorizes rehabilitation to the level of protection exhibited by the flood control work prior to the damaging event. Skagit County DD 1, DD 3, and DD 12 are the local non-federal sponsors for the proposed levee repair projects. Repairs will restore adequate and reliable flood protection to the same level provided by the levees prior to the February 2020 and November 2021 damaging flood events. The USACE plans to repair the levees within its pre-damaged riverward footprint. In-water work will occur between June 15 and August 31.

Consultation is requested under the emergency circumstances provisions of 50 CFR 402.05, due to the urgent need to initiate and complete repairs necessitated by flood events to restore the designed level of protection against abruptly arising and thus imminent risk of loss of human life and property that would remain elevated if the repair is not completed and the damaged levee state is allowed to persist.

The USACE requests initiation of formal consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for the proposed levee repairs with transmittal of this BA amendment and requests your concurrence with our determination of effects. The USACE is also requesting consultation under the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996. The USACE's determination is that the proposed action may adversely affect Essential Fish Habitat for Pacific salmon.

If you have any questions or need additional information, Ms. Kylie Webb is the Environmental Coordinator for this project and can be reached at (206) 764-5531 or kylie.m.webb@usace.army.mil; and Ms. Vanessa Pepi, Endangered Species Coordinator, can be reached at (206) 764-5524 or vanessa.e.pepi@usace.army.mil. I may also be contacted at (206) 764-6761 or laura.a.boerner@usace.army.mil.

Sincerely,

BOERNER.LAUR
A.A.1251907443

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BOERNER.LAURA.A.1251907443
Date: 2023.03.14 13:22:11 -07'00'

Laura A. Boerner, LG, LHG
Chief, Planning, Environmental, and
Cultural Resources Branch

Enclosures

cc:

Ryan McReynolds (USFWS)

APPENDIX G - PUBLIC COMMENTS

Public Comments for the NOP:

Comment 1: On March 21, 2023, the USFWS contacted the USACE via email to request additional documents associated with the NOP.

Response: USACE is coordinating with USFWS.

Comment 2: April 1, 2023 the Suquamish Tribe contacted USACE via email stating that they had no comment on the proposed project.

Response: Thank you for your response.

APPENDIX H – COASTAL ZONE MANAGEMENT ACT COORDINATION



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

June 6, 2023

Department of the Army
United States Corps of Engineers, Seattle District
ATTN: Laura A. Boerner
4735 East Marginal Way South
Building 1202
Seattle, WA 98134-2388

Re: Coastal Zone Management Federal Consistency Decision for Activity Undertaken by a
Federal Agency
Skagit River Diking Districts 1, 3, and 12 Levee Rehabilitation
Skagit County, Washington

Dear Laura A. Boerner:

On April 7, 2023, the Seattle District, U. S. Army Corps of Engineers (Corps) submitted a Consistency Determination with the Washington State Coastal Zone Management Program (CZMP). Ecology issued a 21-day public notice on April 17, 2023 and received no comments. At Ecology's request, the Corps supplied additional information on June 2, 2023.

The proposed federal activity includes repairs to levees in Diking Districts (DDs) 1, 3 and 12 in the cities of Mount Vernon and Burlington and in unincorporated Skagit County, Washington. In February 2020, a flood event damaged 60 linear feet (LF) of the DD 3 Levee and 300 LF of the DD 12 Levee at Site 1. A month later, additional cracking was observed 200 LF upstream and downstream of the DD 12 repair. In November 2021, a flood event damaged 750 LF of the DD 1 Levee, 150 LF of the DD 3 Levee, 300 LF of the DD 12 Levee at Site 1, 160 LF at Site 2, and 325 LF at Site 3. The repairs will restore flood protection to the same levels. The purpose of the project is to repair the levees to their pre-damage levels of flood protection.

At DD 1, the repair consists of reshaping and armoring the riverward slopes over the damaged lengths. The proposed repair length is 750 LF, which includes 50 feet of tie-in repairs on the upstream end of the damage. The downstream end of the project is already tied into the slope from a previous repair. The riverward slope will be reshaped to the greatest extent possible, and a 4-foot blanket of class V riprap underlain by a 1-foot layer of 4- to 8-inch spall rock will be

replaced within the original footprint of the levee prism. The armor rock will rest at the angle of repose where the levee slope meets the river bottom.

At DD 3, any sloughed riprap will be removed from the slope and suitable riprap placed during the flood fight will be salvaged for reuse into the final repair. The downstream extent of the repair will incorporate a buried toe with 4 feet of Class III riprap embedded into the foundation. The damaged riverward slope will be re-armored with a 2.5-foot-thick blanket of Class III riprap placed over quarry spalls. The upstream and downstream ends will be smoothly transitioned into the existing slopes. All repairs will occur within the pre-damage footprint as confirmed by historical records of the most recent prior repair to this site. Total rehabilitation construction length is 150 LF, which includes any necessary transitions. Topsoil and hydroseed will be placed in all areas indicated on the plans to restore the project to the pre-flood conditions.

Repairing the DD 12 levee will restore the levee to its pre-damaged level of protection. However, extensive cracking along the riverward bench slope indicates that the toe erosion has destabilized the 2H:1V slope. The damaged slope at DD 12 site 1 will be laid back at a ratio of 3H:1V from the top of the levee to the bench. Below the bench, the slope will be laid back at a ratio of 2H:1V. Sites 2 and 3 will be laid back to a 3H:1V slope, resulting in both increased stabilization and high-water refuge habitat. Any sloughed riprap will be removed from the slope, and suitable riprap placed during the flood will be salvaged for reuse in the final repair. The downstream extent of the repair at DD 12 Sites 1 and 2 will incorporate a launchable toe using 4 feet of Class V riprap. The damaged riverward slope will be re-armored with a 4-foot-thick blanket of Class V riprap placed over a 12-inch layer of quarry spalls, which is an increase in size from the existing Class IV riprap. The upstream and downstream ends will be smoothly transitioned into the existing adjacent slopes. All repairs will occur within the pre-damage footprint. Total rehabilitation construction length at DD 12 site 1 is 800 LF, DD 12 site 2 is 425 LF, and DD 12 site 3 is 300 LF, which includes any necessary transitions. Topsoil and hydroseed will be placed as indicated on the plans.

Pursuant to Section 307(c)(3) of the Coastal Zone Management Act of 1972 as amended, Ecology concurs with the Corps' determination that the proposed work is consistent with Washington's CZMP. The proposed action was reviewed for consistency under the applicable enforceable policies found in the state Shoreline Management Act, the State Water Pollution Control Act, and the Washington Clean Air Act. The proposal did not trigger the enforceable policies of the Ocean Resources Management Act or the Marine Spatial Plan for Washington's Pacific Coast.

If you have any questions regarding Ecology's consistency determination, please contact Teresa Pucylowski at 360-764-0546.

Your right to appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal, you must do all of the following within 30 days of the date of receipt of this Order:

- File your notice of appeal and a copy of this Order with the PCHB (see filing options below). "Filing" means actual receipt by the PCHB during regular business hours as defined in WAC 371-08-305 and -335. "Notice of appeal" is defined in WAC 371-08-340.
- Serve a copy of your notice of appeal and this Order on the Department of Ecology, in paper form, by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Filing an appeal with the PCHB:

For the most current information regarding filing with the PCHB, visit:
<https://elaho.wa.gov/content/11>

Address and Location Information

Street Address:

Department of Ecology
Attn: Appeals Processing Desk
300 Desmond Drive SE
Lacey, WA 98503

Pollution Control Hearings Board
1111 Israel RD SW
STE 301
Tumwater, WA 98501

Mailing Addresses:

Department of Ecology
Attn: Appeals Processing Desk
PO Box 47608
Olympia, WA 98504-7608

Pollution Control Hearings Board
PO Box 40903

Skagit River Diking Districts 1, 3, and 12 Levee Rehabilitation
Aquatics ID No. 142480
June 6, 2023
Page 4 of 4

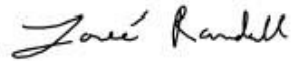
Olympia, WA 98504-0903

E-Mail Address:

Department of Ecology
Not currently available (see WAC 371-08)

Pollution Control Hearings Board
Pchb-shbappeals@eluhc.wa.gov

Sincerely,



Loree' Randall, Section Manager
Federal Permitting Section
Shorelands and Environmental Assistance Program

Sent via e-mail: Laura.A.Boerner@usace.army.mil

E-cc: fedconsistency@ecy.wa.gov
Caren Crandall, Corps
Kylie Webb, Corps
Teresa Pucylowski, Ecology
Joe Burcar, Ecology
Misty Blair, Ecology
Chris Luerkens, Ecology

APPENDIX I – CULTURAL RESOURCES COORDINATION



Allyson Brooks Ph.D., Director
State Historic Preservation Officer

March 11, 2021

Ms. Laura A. Boerner
Environmental Resources Section
Corps of Engineers – Seattle District
PO Box 3755
Seattle, Washington 98124-3755

Re: Skagit Diking Districts 3 and 12 Levee Rehabilitation Project
Log No.: 2021-03-01287-COE-S

Dear Ms. Boerner:

Thank you for contacting our department. We have reviewed the materials you provided for the Area of Potential Effect (APE) for the proposed Skagit Diking Districts 3 and 12 Levee Rehabilitation Project, Skagit County, Washington

We concur with your determination of the Area of Potential Effect (APE) as described and presented in your figures and text.

We look forward to further consultations as you consult with the concerned tribal governments, provide the results of the professional cultural resources review, and render your determination of effect.

We would also 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 compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Whitlam', followed by a horizontal line.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: rob.whitlam@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
www.dahp.wa.gov





Allyson Brooks Ph.D., Director
State Historic Preservation Officer

April 13, 2021

Laura Boerner, LG, LHG
Chief, Planning, Environmental and
Cultural Resources Branch
US Army Corps of Engineers - Seattle District

In future correspondence please refer to:
Project Tracking Code: 2021-03-01287
Property: Skagit Diking Districts 3 and 12 Levee Rehabilitation, Skagit County, WA
Re: NO Adverse Effect

Dear Laura Boerner:

Thank you for contacting the State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) regarding the above referenced proposal. This action has been reviewed on behalf of the SHPO under provisions of Section 106 of the National Historic Preservation Act of 1966 (as amended) and 36 CFR Part 800. Our review is based upon documentation contained in your communication.

First, we agree with the Area of Potential Effect (APE) as mapped in the survey report. We also concur that the current project as proposed will have "NO ADVERSE EFFECT" on historic properties within the APE that are listed in, or determined eligible for listing in, the National Register of Historic Places. As a result of our concurrence, further contact with DAHP on this proposal is not necessary. However, if new information about affected resources becomes available and/or the project scope of work changes significantly, please resume consultation as our assessment may be revised. Also, if any archaeological resources are uncovered during construction, please halt work immediately in the area of discovery and contact the appropriate Native American Tribes and DAHP for further consultation.

Thank you for the opportunity to review and comment. Please ensure that the DAHP Project Number (a.k.a. Project Tracking Code) is shared with any hired cultural resource consultants and is attached to any communications or submitted reports. If you have any questions, please feel free to contact me.

Sincerely,

Holly Borth
Project Compliance Reviewer
(360) 890-0174
holly.borth@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
www.dahp.wa.gov





Allyson Brooks Ph.D., Director
State Historic Preservation Officer

February 15, 2023

Laura A. Boerner
Environmental Resources Section
Corps of Engineers – Seattle District
PO Box 3755
Seattle, Washington 98124-3755

Re: Skagit County Diking District No. 1 Main Levee Right Bank Non-Federal
Levee Rehabilitation 2022 Project
Log No.: 2023-01-00372-COE-S

Dear Laura Boerner:

Thank you for contacting our department. We have reviewed the materials you provided for the Area of Potential Effect (APE) for the proposed *Skagit County Diking District No. 1 Main Levee Right Bank Non-Federal Levee Rehabilitation 2022 Project*, Mount Vernon, Skagit County, Washington

We concur with your determination of the Area of Potential Effect (APE) as described and presented in your figures and text.

We look forward to further consultations as you consult with the concerned tribal governments, the results of your identification efforts, and your determination of effect.

We would also 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 compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Whitlam', followed by a horizontal line.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: rob.whitlam@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
www.dahp.wa.gov





Allyson Brooks Ph.D., Director
State Historic Preservation Officer

February 15, 2023

Laura A. Boerner
Environmental Resources Section
Corps of Engineers – Seattle District
PO Box 3755
Seattle, Washington 98124-3755

Re: Skagit County Diking District No. 12 Site 2 and 3 Main Levee Right Bank
Non-Federal Levee Rehabilitation 2022 Project
Log No.: 2023-01-00452-COE-S

Dear Laura Boerner:

Thank you for contacting our department. We have reviewed the materials you provided for the Area of Potential Effect (APE) for the proposed *Skagit County Diking District No. 12 Site 2 and 3 Main Levee Right Bank Non-Federal Levee Rehabilitation 2022 Project*, Burlington, Skagit County, Washington

We concur with your determination of the Area of Potential Effect (APE) as described and presented in your figures and text.

We look forward to further consultations as you consult with the concerned tribal governments, the results of your identification efforts, and your determination of effect.

We would also 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 compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Whitlam', with a long horizontal flourish extending to the right.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: rob.whitlam@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065
www.dahp.wa.gov





Allyson Brooks Ph.D., Director
State Historic Preservation Officer

May 8, 2023

Laura A. Boerner
Planning, Environmental & Cultural Resources
Seattle District
Corps of Engineers
PO Box 3755
Seattle, Washington 98124

Re: PL 84-99 Skagit Diking District 1 and 12 Sites 2 and 3
Levee Rehabilitation Project
Log No.: 2023-01-00372 /2023-01-0037 -COE-S

Dear Laura A. Boerner:

Thank you for contacting our department. We have reviewed the information you provided for the proposed *PL 84-99 Skagit Diking District 1 and 12 Sites 2 and 3 Levee Rehabilitation Project*, Skagit County, Washington.

We concur with your Determination of No Adverse Effect with the stipulation for an unanticipated find plan.

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 encountered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised, including information regarding historic properties that have not yet been identified. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Whitlam', is written over a horizontal line.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: rob.whitlam@dahp.wa.gov

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www.dahp.wa.gov



APPENDIX J – TRIBAL COORDINATION



Upper Skagit Indian Tribe
25944 Community Plaza Way,
Sedro Woolley, WA 98284
Phone (360) 854-7090 Fax (360) 854-7042

Transmitted via e-mail

April 12, 2023

Kylie Webb
U.S. Army Corps of Engineers, Seattle District
Planning, Environmental, and Cultural Resources Branch
4735 East Marginal Way South, Building 1202
Seattle, WA 98134
Kylie.M.Webb@usace.army.mil

RE: Skagit River Diking Districts 1, 3, and 12 Levee Rehabilitation Projects, Reference PMP-23-04

Dear Kylie Webb,

Upper Skagit Indian Tribe (Tribe) submits these comments pertaining to the Notice of Preparation (NOP) for the Skagit River Diking Districts 1, 3, and 12 Levee Rehabilitation Projects, Reference PMP-23-04. The Tribe previously submitted comments on the related April 1, 2021 NOP for Skagit River Diking Districts 3 and 12 Levee Rehabilitation, Reference PMP-21-01. Those comments, submitted April 27, 2021, are attached and incorporated herein by reference.

As described in its April 27, 2021 letter, the Tribe is concerned about the cumulative and unmitigated impacts of levee repairs to natural habitat forming processes, including in floodplain areas landward of levees. The environmental mitigation measures proposed in the current NOP do not account for the extent, magnitude, and duration of impacts to anadromous salmonid habitat, including Endangered Species Act critical habitat for Chinook Salmon and Steelhead Trout.

Considering the history of flood damage to the levee system and the virtual certainty that new repairs will be required in future, the Tribe requests U.S. Army Corps of Engineers (Corps) and local sponsors pursue advance mitigation. This would provide the time needed to accomplish levee setbacks, which would provide better mitigation for impacts to the river channel and adjacent floodplains compared to the mitigation measures described in the NOP.

Due to time constraints and the importance of providing the level of protection that existed before the flood damage occurred, the Tribe is not requesting levee setbacks for the current NOP. However, mitigation credits should be applied retroactively to account for unmitigated impacts, including for temporal losses during the period between levee repairs and eventual completion of a levee setback project.

For the near-term, additional mitigation measures are warranted than what is proposed in the NOP. The proposed mitigation resembles that from previous levee repair efforts, but the Corps has not provided evidence that past mitigation measures have been successful. Meanwhile, it is apparent that wherever the active river channel directly abuts a levee face, salmonid habitat conditions remain highly degraded. The Tribe requests increased riparian plantings, greater number of rootwads, and placement of engineered log jams that influence larger areas of flow. Justification and greater detail regarding these requests were included in the Tribe's April 27, 2021 comment letter.

Thank you for considering these comments. If you have questions, please contact the Tribe's Habitat Biologist, Rick Hartson, (360) 854-7049, rickh@upperskagit.com.

Sincerely,



Doreen Maloney
General Manager

Attachment:

Comment letter submitted April 27, 2021 regarding Corps Reference PMP-21-01



Upper Skagit Indian Tribe

25944 Community Plaza Way,
Sedro Woolley WA 98284
Phone: (360) 854-7090

April 27, 2021

Amanda Ogden
Planning, Environmental, and Cultural Resources Branch
Seattle District
U.S. Army Corps of Engineers
P.O. Box 3755
Seattle, WA 98124-3755
By email: Amanda.Ogden@usace.army.mil

RE: Skagit River Diking Districts 3 and 12 Levee Rehabilitation, reference PMP-21-01

Dear Amanda Ogden,

The Upper Skagit Indian Tribe (Tribe) responds to the U.S. Army Corps of Engineers (Corps) April 1, 2021 Notice of Preparation (NOP) for the above referenced levee rehabilitation project. The Tribe submits this letter as a federally recognized Indian Tribe, as a successor in interest to the Treaty of Point Elliot (Treaty), in furtherance of its sovereign responsibility to protect the rights reserved by the Treaty, and to protect the natural and cultural resources that will be impacted by the levee rehabilitation project.

The NOP acknowledges that the long history of riverbank modification in the lower Skagit valley has resulted in considerable degradation to edge habitat and detrimental impacts to salmon recovery. The NOP also acknowledges a time lag before mitigation at newly rehabilitated sites will provide the expected habitat benefit. However, this fails to account for the true extent of habitat impacts from levee rehabilitation. The Corps' proposed alternative, repair in-place, would impede efforts to recover Skagit salmonid populations, including Endangered Species Act-listed Chinook Salmon and Steelhead Trout. The Corps errs in its failure to consider the levee setback alternative.

The proposed mitigation measures for levee repair in-place will not provide functional, productive habitat, even after considering the time lag effect. Hydromodified banks have degraded habitat complexity and reduced juvenile salmonid use compared to natural river banks.¹ The detrimental consequences to salmonid habitat productivity in the Skagit are well-established.² Proposed mitigation measures would alleviate these impacts to a degree, but due to lack of monitoring previous similar mitigation actions, it is difficult to quantify the expected reduction in habitat impact. It is certain the repair in-place option would perpetuate a degraded habitat condition into the future, even after considering the time lag effect of mitigation measures. For instance, without mature riverine forests, which are not allowed to develop on levees under the Corps' PL 84-99 authority (33 U.S.C. 701n) (69 Stat. 186),³ river banks are hydraulically simplified, with a consequent reduction in low-velocity areas used for rearing by Chinook and other salmonids. Additionally, the lack of in-tact forests with diverse understory plants reduces the amount of terrestrially-derived nutrients and prey items that enter the

¹ Beamer, E.M. and R.A. Henderson. 1998. Juvenile Salmonid Use of Natural and Hydromodified Stream Bank Habitats in the Mainstem Skagit River, Northwest Washington. Report prepared for U.S. Army Corps of Engineers, Seattle District.

² SRSC and WDFW. 2005. Skagit Chinook Recovery Plan. Skagit River System Cooperative, La Conner, WA.

³ Engineer Pamphlet (EP) 1110-2-18, U.S. Army Corps of Engineers, May 1, 2019.

river system.⁴ These impacts result in a higher proportion of fish that migrate to the sea earlier or at a smaller body size, ultimately reducing the number of returning adults and the Tribe's treaty reserved harvest rights.

In addition to direct impacts on channel edge habitats, the ongoing maintenance of the levee system essentially interrupts the formation of salmonid habitats, including areas landward of the existing levee system.⁵ This is not mentioned in the NOP nor accounted for in the preferred alternative and proposed mitigation measures. In the past, the Corps has maintained that it is not responsible for the area landward of the levee system. However, this contradicts the very purpose of the levee rehabilitation, which is to impede floodplain inundation and bank erosion. As such, the Tribe maintains the Corps has defined the area of impact overly narrowly. Floodplain inundation and bank erosion are two of the most important processes in the creation and maintenance of salmonid habitats.⁶ As a result of Corps actions to rehabilitate levees, there is less available habitat and the quality of existing habitat is degraded. For example, wider channels (i.e. levee setbacks) would foster increased sediment aggradation, resulting in formation of bars and vegetated islands waterward of the channel banks. Given enough room, the river could return a portion of its original character, where fluvial processes support the formation of key habitat features such as side channels, backwater alcoves, and log jams. The NOP does not address these impacts, let alone attempt to adequately mitigate for them.

The Tribe acknowledges that ongoing impacts to salmonid habitat caused by the extensive levee system in the lower Skagit valley cannot solely be addressed under current regulatory frameworks and societal and economic constraints. Nevertheless, the Tribe believes there are opportunities that have not been adequately pursued, which could practically be achieved within existing constraints. It is worth recognizing that out of practical necessity the compromise envisioned here would still favor the status quo, due to the entrenched economic activities and property rights that pervade the floodplain areas landward of the levee system. The Tribe impresses upon the Corps and any readers of this comment letter, the status of anadromous Skagit salmonids and the Tribe's opportunity to exercise treaty reserved rights to fish are both in extreme peril. This should not impede us from collectively seeking new approaches to minimize the ongoing and extensive impacts borne by the PL 84-99 levee rehabilitation program.

The Corps should develop a proactive strategy for mitigating actions authorized under PL 84-99 in the Skagit that accounts for the ongoing series of past, current, and future levee rehabilitation actions, which considered together have a reasonably close causal relationship to one another.⁷ It is evident from past actions and the high degree of ongoing maintenance required for the levee system that future levee rehabilitation will continue to be required.⁸ Moreover, the very act of rehabilitating each

⁴ Quinn, T., G.F. Wilhere, and K.L. Krueger, technical editors. 2020. Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications. Habitat Program, Washington Department of Fish and Wildlife, Olympia.

⁵ See August 19, 2016 letter from Upper Skagit Indian Tribe to Karen Urelus, U.S. Army Corps of Engineers, Seattle District, regarding proposed regional conditions for reissuance of the nationwide permits (COE-2015-0017). The letter provides a detailed explanation of the detrimental impacts of bank stabilization in the Skagit on fluvial habitat forming process and salmonid recovery efforts, including impacts landward of the ordinary high-water mark (i.e. floodplain impacts landward of stabilized channel banks). The analysis contained in the letter is wholly applicable to the Corps' levee rehabilitation actions under its PL 84-99 authority.

⁶ SRSC and WDFW. 2005. Skagit Chinook Recovery Plan. Skagit River System Cooperative, La Conner, WA.

⁷ 40 CFR 1508.1(g).

⁸ 2015 Skagit River Levee Rehabilitation Project NOP, (reference: EN-ER-15-13); Skagit Diking District #1 Levee Rehabilitation NOP (reference: PMP-18-08); Skagit Diking District #22 Levee Rehabilitation NOP (reference: PMP-18-09).

damaged levee leads to an increased risk of levee failure for other portions of eligible levee. This connection is straightforward, not requiring a lengthy causal chain or consideration of effects that are geographically or temporally remote.⁹ Simply put, the levee rehabilitation proposed in the NOP will result in increased Skagit River flow being maintained within the levee system during the next flood event, an inevitable occurrence as long as the rains continue to nourish the adjacent agricultural fields, thereby passing the risk to life, safety, and property toward less well-maintained or constructed portions of the levee system. Inevitably, the Corps and local dike district sponsors will continue to hopscotch from one levee failure to another, fighting the never ceasing force of flowing water. Indeed, the actions proposed in the NOP would increase risk to downstream levees, including those eligible under PL 84-99. If this is to be considered an overly lengthy causal chain of project effects, the Tribe is at a loss. As the lead federal agency, the Corps is in a leading position to ameliorate these impacts to Skagit salmonid habitat and recovery.

Rather than continue to issue a series of essentially repeated NEPA analyses and decisions, in which the Corps eschews the levee setback alternative due to cost and implementation constraints, the Corps should proactively initiate levee setback projects. Such an effort could more meaningfully mitigate for the *cumulative impacts* of past, current, and future levee rehabilitation actions. Such a proactive mitigation approach would better address the repeated rehabilitation actions, which collectively amount to active maintenance of a degraded river and floodplain, with consequent impacts to salmonid habitat and recovery efforts.

A strategy of proactive levee setbacks would require considerable effort. As described above, this level of effort is needed to account (yet only partially) for the level of impact caused by the proposed action. Due to the complexities and number of relevant stakeholders, it is premature for the Tribe to suggest specific levee setback projects. Rather, the Corps should lead a process that would ultimately result in implementation of levee setback projects. Such an effort would need to consider a range of complicated issues, which might include flood and human safety risk, mitigation accounting for impacts to habitat forming process, costs and constraints created for dike districts, funding for project implementation, and identification or acquisition of suitable properties landward of existing levees. This list is not meant to be exhaustive. It is meant to indicate the Corps, with its existing authority and capacity, is the appropriate lead for this requested effort.

Environmental Mitigation Measures

As described above, a more proactive approach is needed to improve mitigation for the Corps' PL 84-99 levee rehabilitation actions in the Skagit. Meanwhile, mitigation measures should make every effort to maximize the quality and quantity of native vegetation on the levees. Additionally, structural elements should be included for each rehabilitation action with the intent to increase the amount of low-velocity salmonid rearing habitat. The Tribe did not participate in development of the Habitat Capacity Mitigation Tool, which the Corps has relied on to assess impacts of levee repairs and suggest mitigation measures.

Following are the Tribe's requested mitigation measures. Because there is not a practical option to increase the area exposed to fluvial processes (i.e. set back the levee system) on the timeline set forth by the Corps for the specific repairs described in the NOP, the Tribe's requested measures will not address the indirect and cumulative impacts to habitat forming processes landward of the levee system. *As such, the Corps should require additional retroactive mitigation for the Dike District 3 and 12 repairs, once a proactive levee setback strategy is in place.*

⁹ 40 CFR 1508.1(g).

The NOP proposes two rows of willow plantings along the full repair at both sites. This is not an adequate quantity of riparian plantings. For example, management recommendations produced by the Washington Department of Fish Wildlife (WDFW) indicate buffers near both project sites should be over 200 feet wide to achieve proper riparian function (recommendations at the Dike District 3 site may require additional guidance from the local WDFW biologist due to lack of soil data, but adjacent areas with available soil data indicate recommend buffers exceeding 200 feet wide).¹⁰ The Tribe understands that Corps policies place severe restrictions on riparian vegetation in order that levees remain eligible under PL 84-99.¹¹ The discrepancy between WDFW recommendations and Corps requirements illustrates the need for a reinvigorated mitigation strategy. Until such time, the area of mitigation plantings should be expanded to come closer to WDFW management recommendations. A practical accommodation would be to increase the length of plantings. The Tribe suggests a mitigation planting area defined as the length of the project action multiplied by the WDFW recommended buffer width. It is important to note that this would still fall far short of meeting the ecological functions intended by WDFW's recommendations because the buffer width would be considerably narrower than recommended and the planting would miss key species, including native conifer trees.¹²

The NOP proposes placement of topsoil and native hydroseed along the upper slope along the full repair at both sites. The Tribe does not agree that hydroseed should receive mitigation credit. The resultant vegetative cover provides near zero value in terms of hydraulic complexity and salmonid rearing habitat along channel banks. Hydroseeding is better categorized as a best management practice to reduce short-term water quality impacts. Hydroseeded banks do not compare to native riverine forest in terms of habitat value and ecological function.

The NOP proposes a layback at the Dike District 12 repair site to create a 3H:1V slope along 700 linear feet of levee. It is conceivable that this provides a measurable improvement by increasing the area of edge habitat within the velocity range preferred by rearing Chinook and other anadromous salmonids, however, without a monitoring program to assess the success of similar previous structural changes, it is difficult to assign a habitat value to this mitigation measure. Regardless of the actual habitat value, it is sure to be well below what could be achieved with levee setbacks. Slope laybacks do not address the indirect impacts that occur landward of the levee system and they do little, if anything, to improve habitat forming processes waterward of the levee system.

The NOP proposes placement of 7 anchored rootwads at a location downstream of the Dike District 3 repair site. The placement of log structures along channel edges can provide a meaningful improvement in habitat for anadromous salmonids, albeit a localized benefit with a narrow scope for improvement relative to other potential mitigation measures, such as levee setbacks. The Dike District 12 repair should also incorporate anchored rootwads. Additionally, design revisions could help increase the habitat benefit. Specifically, rootwads should be combined into larger engineered structures that mimic the formation of log jams, creating a larger zone of hydraulic influence and greater habitat benefit than can be achieved by single anchored logs. Design and construction of engineered log jams has become a common practice in western Washington streams, including within

¹⁰ See Priority Habitat and Species: Riparian Ecosystems and the Online SPTH Map Tool.

<https://wdfw.majis.arcgis.com/apps/MapJournal/index.html?appid=35b39e40a2af447b9556ef1314a5622d>

¹¹ Engineer Pamphlet (EP) 1110-2-18, U.S. Army Corps of Engineers, May 1, 2019.

¹² Riparian Ecosystems, Volume 2: Management Recommendations. 2020. Amy Windrope, Terra Rentz, Keith Folkerts, and Jeff Azerrad. A Priority Habitats and Species Document of the Washington Department of Fish and Wildlife, Olympia, Washington.

the Skagit River levee system.^{13, 14} Washington State Department of Transportation has taken steps to incorporate large wood structures into the bank protection structures themselves, in some cases relying on engineered wood structures to provide the bulk of the bank protection.¹⁵ This represents a considerable improvement to edge habitat relative to the standard riprap protection proposed by the Corps for rehabilitation of Dike District 3 and 12 levees. It is important to reiterate that rootwads placed waterward of the levees will not adequately mitigate for the indirect impacts to fluvial habitat forming processes, though there should be a localized increase in habitat formation, particularly if rootwads are combined into larger jam structures (e.g. sediment aggradation in the lee of rootwad structures).

Thank you for considering the Tribe's comments on this urgent issue. As the Tribe struggles to maintain opportunities to exercise its treaty reserved rights, it is becoming increasingly imperative that we work collectively to transform management of the Skagit River and the habitats relied upon by anadromous salmonids. If you have any questions about the comments contained herein, please contact the Tribe's Habitat Biologist, Rick Hartson, Rickh@upperskagit.com, (360) 854-7049.

Sincerely,



Doreen Maloney
Treaty Entitlement Director

Cc:
NMFS: Elizabeth Babcock

¹³ Cramer, Michelle L. (managing editor). 2012. Stream Habitat Restoration Guidelines. Co-published by the Washington Departments of Fish and Wildlife, Natural Resources, Transportation and Ecology, Washington State Recreation and Conservation Office, Puget Sound Partnership, and the U.S. Fish and Wildlife Service. Olympia, Washington.

¹⁴ A restoration project funded by the Washington State Recreation and Conservation Office illustrates the feasibility of installing engineered wood structures waterward of the levee system near the vicinity of the Dike District 3 mitigation site. <http://secure.rco.wa.gov/prism/search/projectsnapshot.aspx?ProjectNumber=02-1561>

¹⁵ Washington State Department of Transportation has proposed and is currently pursuing permitting for engineered wood deflectors with log jacks placed between as bank protection for its SR530 Sauk River Side Channel project (CED concurrence meeting held September 22, 2020).

Response:

Public Law 84-99, as provided by Congress, authorizes the U.S. Army Corps of Engineers (USACE) to act and react to emergencies caused by floods, contaminated water sources, drought, or dam failures. This authority allows the Corps to repair and/or rehabilitate any qualified flood control project (e.g., levees) whether it is federally constructed or privately owned. The authority provided by the PL 84-99 program is limited to restoration of the pre-flood level of protection for life and property using the least cost alternative that restores the level of protection while fulfilling all legal, technical, and environmental requirements. Improvements or betterments beyond this are possible under the PL 84-99 program but are limited to those supported by the non-federal sponsor.

Setback levees would provide benefits for ESA-listed species that maintaining the existing structure does not. However, implementing such an alternative is dependent on the damaged site, existing conditions, and the agreement of the non-federal sponsor. Betterments beyond repairing the damaged segment of the levee, such as setting back the entire segment, would be beyond the scope of the project unless the non-federal sponsor supports such an alternative and meets various obligations, including land acquisition and additional costs associated with the betterment. In the case of Skagit DD 1, 3, and 12, the non-federal sponsor has chosen to not pursue a setback alternative and so the PL 84-99 repairs are limited to a narrower scope of alternatives.

The Skagit DD 1, 3, and 12 Levees are likely to remain in their current alignment in the foreseeable future. Roads, railroads, bridges, trails, business, agriculture, and utilities are located immediately near the levees. Substantial resources and support are necessary to setback the entirety of the Skagit levee system, more than is available to repair the comparatively small, damaged sites on the DD 1, 3, and 12 Levees. Setbacks or improvements can be evaluated through other USACE programs, each of which also require the sharing of implementation and operation/maintenance responsibilities, including sharing cost, with a non-federal partner. If a non-federal sponsor is interested in setbacks or other levee improvements the USACE has a variety of programs with authorities to pursue, including aquatic habitat ecosystem restoration (Continuing Authorities Program [CAP] Section 206), restoration of degraded ecosystems through the modification of existing USACE's projects (CAP Section 1135), construction or improvement of flood control works (CAP Section 205), Planning Assistance to States (PAS), or Tribal Partnership Program (TPP). This is not an exhaustive list and other programs are available.

The proposed mitigation for these repairs is to mitigate for impacts to endangered species and habitat directly associated with the repair activities. These impacts consist of vegetation removal, turbidity, and disturbance from sound, vibration, and human activity associated with heavy equipment used to complete the repair work. These impacts are expected to be temporary and short in duration (6 to 8 weeks). The mitigation is not intended to mitigate for the existence of the Skagit levee system in its entirety, which the USACE includes in the baseline. The proposed mitigation would offset impacts in the affected reach from the proposed action. Mitigating to match the WDFW recommended riparian buffers is infeasible at the repair sites due to existing development. Similarly, planting an area defined as the length of the project action multiplied by the WDFW recommended buffer width would require, for these Skagit repairs, an estimated 91 miles of shoreline. Implementing this proposed approach would face similar limitations that setting back the levees would given existing development in the area.

USACE will respond to the Upper Skagit Tribe in the future providing further details on these programs and proposing additional coordination with the Upper Skagit Tribe in regard to program level PL 84-99 concerns.



Skagit River System Cooperative

11426 Moorage Way • P.O. Box 368 La Conner, WA 98257-0368
Phone: 360-466-7228 • Fax: 360-466-4047 • www.skagitcoop.org

May 5, 2023

U.S. Army Corps of Engineers
Attn: Kylie Webb
Planning, Environmental, and Cultural Resources Branch
4735 East Marginal Way S
Seattle, WA 98134

RE: PMP-23-04 Skagit River Diking Districts 1, 3, and 12 Levee Rehabilitation Projects
(Submitted electronically)

Dear Kylie,

These comments are offered on behalf of the Sauk-Suiattle Indian Tribe and the Swinomish Indian Tribal Community. They are in response to PMP-23-04 for Levee Rehabilitation Projects by Diking Districts 1, 3, and 12 along the Skagit River. Levees along the Skagit River have an outsized impact on resources important to these tribes. Measures implemented in the interest of their maintenance and repair affect fish habitat directly and indirectly. We appreciate the opportunity to provide the following comments.

We understand that this work is in follow-up to emergency measures performed during flood events that occurred in 2020 and 2021. Flood events of the scale of November 2021 are anticipated to occur more frequently in the coming decades due to the climatological changes that will bring more intense winter storms and larger atmospheric rivers. The present-day configuration of the levee system is simply not the best way to manage the anticipated large floods. A broader perspective to floodplain management and levee setbacks must be considered to avoid ongoing ad-hoc emergency measures, levee overtopping, and catastrophic failure.

We strongly advocate for the ACOE consider and pursue a combination of Alternative 2 – Nonstructural Strategies and Alternative 3 – Levee Setback Alternatives to ensure that impacts to Tribally-important and ESA-protected fisheries resources are minimally impacted and potentially enhanced while also accomplishing the ACOE goals for flood risk management (FRM).

We recognize that the ACOE Flood Risk Management Priorities have evolved to emphasize Climate Resilience and Natural and Nature-Based Approaches to FRM. This Skagit River levee system is highly exposed to climate impacts, with significant increases in both hydrologic peaks and sea levels being described by local and regional experts. The Corps must support implementation of climate-resilient and nature-based solutions to floodplain management in the Skagit delta.

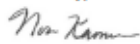
This approach may provide myriad benefits to ESA-protected Chinook salmon and steelhead habitat through floodplain and habitat restoration; vulnerable communities in flood-prone areas; floodplain-based and floodplain-dependent economic sectors including agriculture; and the thousands of residents and businesses located within flood prone areas. In-kind repair and status quo management of the levee system risks inadequate flood protection with immense detrimental impacts to habitat essential to ESA-protected and tribally-important fisheries resources.

For the in-kind actions proposed in PMP-23-04, we understand that the environmental mitigation measures are designed to address impacts of actions to the degraded edge habitats lining the Skagit River channel, such as: incorporation of willow bundles or lifts; hydroseeding of the bank; slope layback; placement of LWD. We encourage installing the lowest row of the willow lifts as low on the bank as flows will allow in order to provide benefit to fish at lower than high-water events. Similarly, in the placement of LWD at RM 10, we encourage construction during a flow significantly low such that LWD placement will allow the functional habitat to benefit fish during lower-water summertime conditions.

For the in-kind actions proposed in PMP-23-04, we applaud the inclusion of these mitigative elements, particularly the placement of in-water habitat elements. However, the mitigation elements address only edge habitat. Levees serve to isolate the floodplain from its river. We are concerned that the Corps has not proposed any mitigation for actions that serve to reestablish that disconnection of the river from floodplain habitats, and request that the Corps propose mitigation for impacts to floodplain habitats and connectivity.

As always, Skagit River System Cooperative appreciates the opportunity to review and comment on this permit application. If you have any questions or would like to discuss further, please contact me at 360-391-8472 or nkammer@skagitcoop.org.

Sincerely,



Nora Kammer
Environmental Protection Ecologist

Response:

The PL 84-99 program limits the project scope to restoration of the pre-flood level of protection for human safety and property using the least cost alternative that restores the level of protection while fulfilling all legal, technical, and environmental requirements. Both a nonstructural and setback levee alternative were considered for these projects (Section 2). The cost and logistical time needed to implement a nonstructural or setback alternative makes it unviable given both the PL 84-99 program's requirement to implement repairs with a favorable benefit-to-cost ratio and the emergency need for repair. These alternatives would also require participation of the non-federal sponsors to implement, and the non-federal sponsors have not agreed to meet their various obligations for these projects, including land acquisition and additional cost share funding in executing a setback alternative.

The Corps' design places the willow plantings at the same location as the existing vegetation line. The Corps assessed the placement of a third row of willows below this line. However, the limiting factor of installation for a third row is the location of the surface water level at the time of construction and the Corps is not confident that the water level will be low enough to allow installation of a third row at the time of construction. The LWD were designed and sited by a hydrologist familiar with such structures. During construction, an excavator will place the material as far into the channel as possible to limit in-water work and water quality impacts. Only the excavator bucket with thumb attachment will extend into the water.

If a non-federal sponsor is interested in setbacks or other levee improvements the USACE has a variety of programs with authorities to pursue, including aquatic habitat ecosystem restoration (Continuing Authorities Program [CAP] Section 206), restoration of degraded ecosystems through the modification of existing USACE's projects (CAP Section 1135), or construction or improvement of flood control works (CAP Section 205). This is not an exhaustive list and other programs are available.