

DAEN (1105-2-10a)

SUBJECT: Puget Sound Nearshore Ecosystem Restoration, Washington

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my interim report on ecosystem restoration along the Puget Sound Nearshore Ecosystem Restoration project, Washington. It is accompanied by the reports of the Seattle District Engineer and the Northwestern Division Engineer. These reports are an interim response to the authority of Section 209 of the River and Harbor Act of 1962, Public Law 87-874 (Puget Sound and Adjacent Waters). This authority directed the Secretary to "cause surveys for flood control and allied purposes...in Puget Sound, Washington, and adjacent waters, including tributaries, in the interest of flood control, navigation, and other water uses and related land resources." Preconstruction engineering and design and additional studies, if funded, will continue under the authority cited above.

2. A strategy for the restoration of the Puget Sound Nearshore was developed through a multi-agency collaborative effort. This strategy includes 36 sites that could facilitate restoration of river deltas, beaches, open coastal inlets, and barrier embayments within the Puget Sound Nearshore. Of the 36 sites, 12 are being evaluated for solutions that will be implemented by other agencies; four are being evaluated for solutions that could be implemented under Section 544 of the Water Resources Development Act (WRDA) 2000; eight are being evaluated for solutions that can be implemented under existing general continuing authorities such as Section 206 of WRDA 1996, as amended, and Section 1135 of WRDA 1986, as amended; and 12 sites are being evaluated for solutions that will require specific authorization.

3. The reporting officers recommend construction authorization at this time of a National Ecosystem Restoration (NER) Plan that will restore aquatic ecosystem structure and function to three sites in the Puget Sound Nearshore - the Duckabush River Estuary, the Nooksack River Delta, and the North Fork Skagit River Delta. The NER plan provides restoration of a total of 2,101 acres of aquatic habitat in the study area and provides substantial benefits to nationally significant resources. The three elements of the NER Plan are described below.

a. Duckabush River Estuary. The reporting officers recommend a plan for the Duckabush River Estuary that would reconnect floodplain and intertidal wetlands, improving tidal exchange, sediment transport, and estuary development. Tidal and riverine hydrology would be restored to 38 acres of the Duckabush River delta, allowing for natural habitat forming processes including sediment and detritus exchange, freshwater input, and tidal flushing within the delta. Restoration in the Duckabush River

will provide rearing habitat for Hood Canal summer chum salmon. Key restoration elements at this site include the following:

- Removal of the Highway 101 causeway and bridges across the estuary;
- Construction of an elevated roadway on a 2,100-foot-long bridge further upstream from the existing highway; and
- The removal of berms along the river and the excavation of channels at or near their historical configurations.

At March 2016 price levels, the estimated first cost of this element is \$90,500,000. The estimated annual cost for operation, maintenance, repair, replacement and rehabilitation of this project element is \$122,000 and is a non-federal responsibility.

b. Nooksack River Delta. The reporting officers recommend a plan for the Nooksack River Delta that would modify levees, roads, and other hydrological barriers to restore riverine and tidal flow and sediment transport and delivery processes to the Nooksack River delta, restoring 1,807 acres of tidal freshwater wetlands. Restoration at the Nooksack River Delta is critical to some of the largest salmon runs in Puget Sound. Removal of stressors will help restore tidal freshwater wetlands and support productive estuarine mixing and tidal freshwater marshes. Tidal marshes provide habitat for birds, and are used by five species of Pacific salmon during critical portions of their life cycle. Key restoration elements at this site include the following:

- Removal of portions of the Nooksack River's west and east bank dikes;
- Construction of a levee along the west bank of the Nooksack River to maintain existing levels of flood risk management. The levee will generally follow the existing Ferndale Road alignment;
- Installation of large woody debris structures to promote hydraulic stability and improve habitat complexity;
- Relocation of a flood-prone portion of the community of Marietta to restore a small portion of the floodplain, avoid flooding impacts from the east bank levee removal, and avoid additional project costs associated with providing flood risk management features to this relatively small area;
- Installation of a new water control structure at the confluence of the Lummi and Nooksack Rivers intended to facilitate transfer of freshwater and sediment to the Lummi River;
- Grading of the Lummi River channel to reconnect it to Nooksack River flows;
- Removal of approximately 12,000 linear feet of berm on the north bank of the Lummi River in the vicinity of North Red River Road, west of Haxton Way;
- Construction of a new levee along the north bank of the Lummi River;
- Removal and relocation of portions of several existing roadways; and
- Construction of new bridges or installation of culverts on both the Nooksack and Lummi Rivers.

DAEN (1105-2-10a)

SUBJECT: Puget Sound Nearshore Ecosystem Restoration, Washington

At March 2016 price levels, the estimated first cost of this element is \$261,805,000. The estimated annual cost for operation, maintenance, repair, replacement and rehabilitation of this project element is \$705,000 and is a non-federal responsibility.

c. North Fork Skagit River Delta. The reporting officers recommend a plan for the North Fork Skagit River Delta that would modify existing flood risk management dikes on both sides of the river, restore natural levees, and restore 256 acres of scarce tidal freshwater marsh. The plan will restore estuarine emergent marsh, scrub-shrub, and forested floodplain along the North Fork, improving connectivity and reducing fragmentation along the channel. This site is included in the Puget Sound Chinook Salmon Recovery Plan. Key restoration elements at this site include the following:

- Lowering approximately 13,000 feet of levee along the south bank;
- Constructing a new levee (Rawlins Road) alignment and tying into the coastal dike system to maintain existing levels of flood risk management to surrounding land and infrastructure, including 208 structures on Fir Island;
- Lowering approximately 3,140 feet of shore armoring on the north bank;
- Breaching portions of the lowered levee and in the areas of armor removal;
- Excavating channels on both banks of the river; and
- Replanting on lowered levees in the corridor along the river from 1,700 feet upstream of the Best Road Bridge to the end of the current south bank levee system on Fir Island.

At March 2016 price levels, the estimated first cost of this element is \$99,299,000. The estimated annual cost for operation, maintenance, repair, replacement and rehabilitation of this project element is \$36,000.

4. Based on a March 2016 price level, the estimated project first cost of the recommended plan is \$451,627,000, which includes monitoring costs of \$1,090,000 and adaptive management costs of \$5,307,000. In accordance with the cost sharing provisions of Section 103(c) of WRDA 1986, as amended (33 U.S.C. 2213(c)), the costs for ecosystem restoration features are shared at a rate of 65 percent federal and 35 percent non-federal. Thus, the federal share of the total project first cost is estimated to be \$293,558,000 and the non-federal share is estimated at \$158,069,000, which includes the costs of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas (LERRD) estimated at \$161,489,000. The LERRD estimate exceeds the 35% non-federal cost share for restoration features by \$3,420,000 and the value of these excess LERRD may be reimbursed to the non-federal sponsor subject to the availability of funds. The Washington State Department of Fish and Wildlife is the non-federal cost-sharing sponsor for the recommended plan. Operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) expenses are estimated to be approximately \$863,000 per year and are the responsibility of the non-federal sponsor.

5. Benefits from this recommended plan would derive from removing nearly 28,860 linear feet of shoreline stressors (including tidal barriers, nearshore fill, and shoreline

DAEN (1105-2-10a)

SUBJECT: Puget Sound Nearshore Ecosystem Restoration, Washington

armoring); thereby restoring processes that would restore 2,101 acres of tidally influenced wetlands in river deltas. These actions would restore wetlands that have either been lost due to fill or blocked by tidal barriers and lack sediment transport and delivery to beaches and embayments. Restoration actions would support recovery of three listed endangered species and 10 threatened species. The average annual cost of the plan is \$21,910,000. The average annual cost per average annual habitat unit is \$31,000, and the average annual cost per acre is \$10,000 and is a non-federal responsibility.

6. The recommended plan was developed in coordination and consultation with federal, state, and local agencies and numerous tribes. Risk and uncertainty were addressed during the study by completing a cost and schedule risk analysis and a sensitivity analysis that evaluated the potential impacts of a change in economic assumptions.

7. The reporting officers identified nine additional opportunities that could provide further improvements to the Puget Sound Nearshore area if implemented. However, potential projects are not recommended for construction authorization at this time because further feasibility level analysis is required to support such a recommendation. Consequently, the reporting officers recommend additional feasibility level studies for Dugualla Bay; Everett Marshland; Telegraph Slough; Chambers Bay; Big Beef Creek Estuary; Tahuya River Estuary; Lilliwaup River Estuary; Big Quilcene River; and Snohomish River Estuary. These feasibility studies, subject to appropriations, would be conducted under the authority of Section 209 of the River and Harbor Act of 1962, Public Law 87-874 (Puget Sound and Adjacent Waters). The cost of the feasibility studies would be shared 50% federal and 50% non-federal in accordance with Section 105 of WRDA 1986, as amended.

8. In accordance with Corps' guidance on the review of decision documents, all technical, engineering and scientific work underwent an open, dynamic and rigorous review process to ensure technical quality. This includes a District Quality Control review, an Agency Technical Review (ATR), an Independent External Peer Review (IEPR) (Type 1), and a Corps Headquarters policy and legal review. All comments from the above referenced reviews have been addressed and incorporated into the final documents.

9. The recommended plan incorporates considerations of analysis of sea level rise in accordance with ER 1100-2-8162. Estimates of sea level rise in Puget Sound range from a low of 0.4 feet to high estimates of 6.3 feet. The restoration of natural functions of the floodplains and river deltas at the recommended sites will allow the sites to adjust to changing geomorphic conditions associated with changing sea levels, e.g., shifting landward as water rises and sediment accretes.

10. Washington level review indicates the plan recommended by the reporting officers is environmentally justified, technically sound, cost effective, and socially acceptable. The plan complies with all essential elements of the U.S. Water Resources Council's

Economic and Environmental Principal and Guidelines for Water and Land Related Resources Implementation Studies. The recommended plan complies with other administration and legislative policies and guidelines. The views of interested parties including federal, state, and local agencies have been considered.

11. I concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the plan for ecosystem restoration in the Puget Sound Nearshore, Washington be authorized in accordance with the reporting officers' recommended plan at a March 2016 estimated project first cost of \$452,286,000. My recommendation is subject to cost sharing, financing, and other applicable requirements of federal and state laws and policies, including Public Law 99-662, WRDA 1986, as amended, and in accordance with the required items of local cooperation that the non-federal sponsor shall, prior to project implementation, agree to:

- a. Provide 35 percent of total ecosystem restoration costs as further specified below:
 1. Provide the required non-federal share of design costs in accordance with the terms of a design agreement entered into prior to commencement of design work for the project;
 2. Provide, during the first year of construction, any additional funds necessary to pay the full non-federal share of design costs;
 3. Provide all lands, easements, and rights-of-way, including those required for relocations, the borrowing of material, and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct all improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material all as determined by the government to be required or to be necessary for the construction, operation, and maintenance of the project;
 4. Provide, during construction, any funds necessary to make its total contributions equal to 35 percent of total project costs.
- b. Prevent obstructions or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) such as any new developments on project lands, easements, and rights-of-way or the addition of facilities that might reduce the outputs produced by the project, hinder operation and maintenance of the project, or interfere with the project's proper function;
- c. Shall not use the project or lands, easements, and rights-of-way required for the project as a wetlands bank or mitigation credit for any other project;

- d. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way required for construction, operation, and maintenance of the project, including those necessary for relocations, the borrowing of materials, or the disposal of dredged or excavated material; and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act;
- e. For so long as the project remains authorized, operate, maintain, repair, rehabilitate, and replace the project, or functional portions of the project, including any mitigation features, at no cost to the federal government, in a manner compatible with the project's authorized purposes and in accordance with applicable federal and state laws and regulations and any specific directions prescribed by the federal government;
- f. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, rehabilitation, and replacement of the project and any betterments, except for damages due to the fault or negligence of the United States or its contractors;
- g. Perform, or ensure performance of, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the federal government determines to be required for construction, operation, and maintenance of the project. However, for lands that the federal government determines to be subject to the navigation servitude, only the federal government shall perform such investigations unless the federal government provides the non-federal sponsors with prior specific written direction, in which case the non-federal sponsors shall perform such investigations in accordance with such written direction;
- h. Assume, as between the federal government and the non-federal sponsors, complete financial responsibility for all necessary cleanup and response costs of any hazardous substances regulated under CERCLA that are located in, on, or under lands, easements, or rights-of-way that the federal government determines to be required for construction, operation, and maintenance of the project;
- i. Agree, as between the federal government and the non-federal sponsors, that the non-federal sponsors shall be considered the operators of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, repair, rehabilitate, and replace the project in a manner that will not cause liability to arise under CERCLA; and

DAEN (1105-2-10a)

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12. The recommendations contained herein reflect the information available at this time and current departmental policies governing the formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of the national civil works construction program or the perspective of higher levels within the executive branch. Consequently, the recommendations may be modified before they are transmitted to Congress for authorization and/or implementation funding. However, prior to transmittal to Congress, the State of Washington, interested federal agencies, and other parties will be advised of any significant modifications in the recommendations and will be afforded an opportunity to comment further.

Todd T. Semonite
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Commanding General