

Chehalis River Basin Flood Damage Reduction Project

— NEPA Environmental Impact Statement —
Executive Summary



US Army Corps
of Engineers®

September 18, 2020

Chehalis River Basin Flood Damage Reduction Project
Lewis County, Washington
National Environmental Policy Act Environmental Impact Statement
September 18, 2020

Responsible Agency: The lead federal agency responsible for compliance with the National Environmental Policy Act (NEPA) is the U.S. Army Corps of Engineers (Corps), Seattle District.

Abstract: The Chehalis Basin Flood Control Zone District (Applicant) is proposing to reduce the risk of flood damage along the Chehalis River mainstem by constructing and operating a flood retention facility and Airport Levee Improvements in Lewis County, Washington (proposed project). The flood retention facility would be located near the town of Pe Ell and would be operated to hold back major or greater floods in a temporary reservoir. The Airport Levee Improvements would improve the existing levee at the Chehalis-Centralia Airport to reduce the risk of flooding at this location.

The Applicant is required to obtain a Department of the Army authorization under Section 404 of the Clean Water Act (33 Code of Federal Regulations 320-332), to construct the proposed project. The Corps' decision to issue, issue with conditions, or deny a permit for activities within the Corps' jurisdiction associated with construction and operation is a federal action requiring NEPA review. This Draft Environmental Impact Statement (EIS) evaluates the effects on the natural and built environment from the proposed project. This includes two action alternatives and a No Action Alternative. The action alternatives include the proposed project, Alternative 1, and an alternative to build the flood retention facility on a smaller foundation, Alternative 2. The analysis of the natural environment includes water quantity and quality, geology, geomorphology, wetlands and other waters, aquatic species and habitats, and terrestrial species and habitats. The analysis of the built environment includes air quality, visual quality, noise and vibration, land use, recreation, cultural resources, transportation, public services and utilities, environmental health and safety, socioeconomics, and environmental justice. An initial list of mitigation measures have been identified. The Draft EIS also reviews the potential impacts in combination with past, present, and reasonably foreseeable future actions.

This document is available online at <https://chehalisbasinstrategy.com/eis/nepa-process/>. Comments on this Draft EIS will be accepted for 60 days after the issuance of the Notice of Availability. Comments may be submitted in the following ways:

- By mail:
Chehalis River Basin Flood Damage Reduction Project
c/o Anchor QEA
6720 South Macadam Street, Suite 125
Portland, Oregon 97219
- By email: chehalis@usace.army.mil
- Online: <https://chehalisbasinstrategy.com/eis/nepa-process/>
- At a public meeting verbally or in writing (dates and times provided in the Notice of Availability)

Please send requests for additional information to:

Brandon Clinton, Project Manager
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Seattle, Washington 98124-3755
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ES EXECUTIVE SUMMARY

ES.1 Introduction

The Chehalis River Basin Flood Control Zone District (Applicant) is proposing the Chehalis River Basin Flood Damage Reduction Project (proposed project). The proposed project would reduce flood damage in the upper Chehalis River Basin. This would be achieved by temporarily storing flood waters from the Willapa Hills and improving the levee at the Chehalis-Centralia Airport (Figure ES-1). The Applicant proposes to construct a flood retention facility with a temporary reservoir near the town of Pe Ell, Lewis County, Washington. Levee improvements would be constructed around the Chehalis-Centralia Airport in the city of Chehalis, Lewis County, Washington.

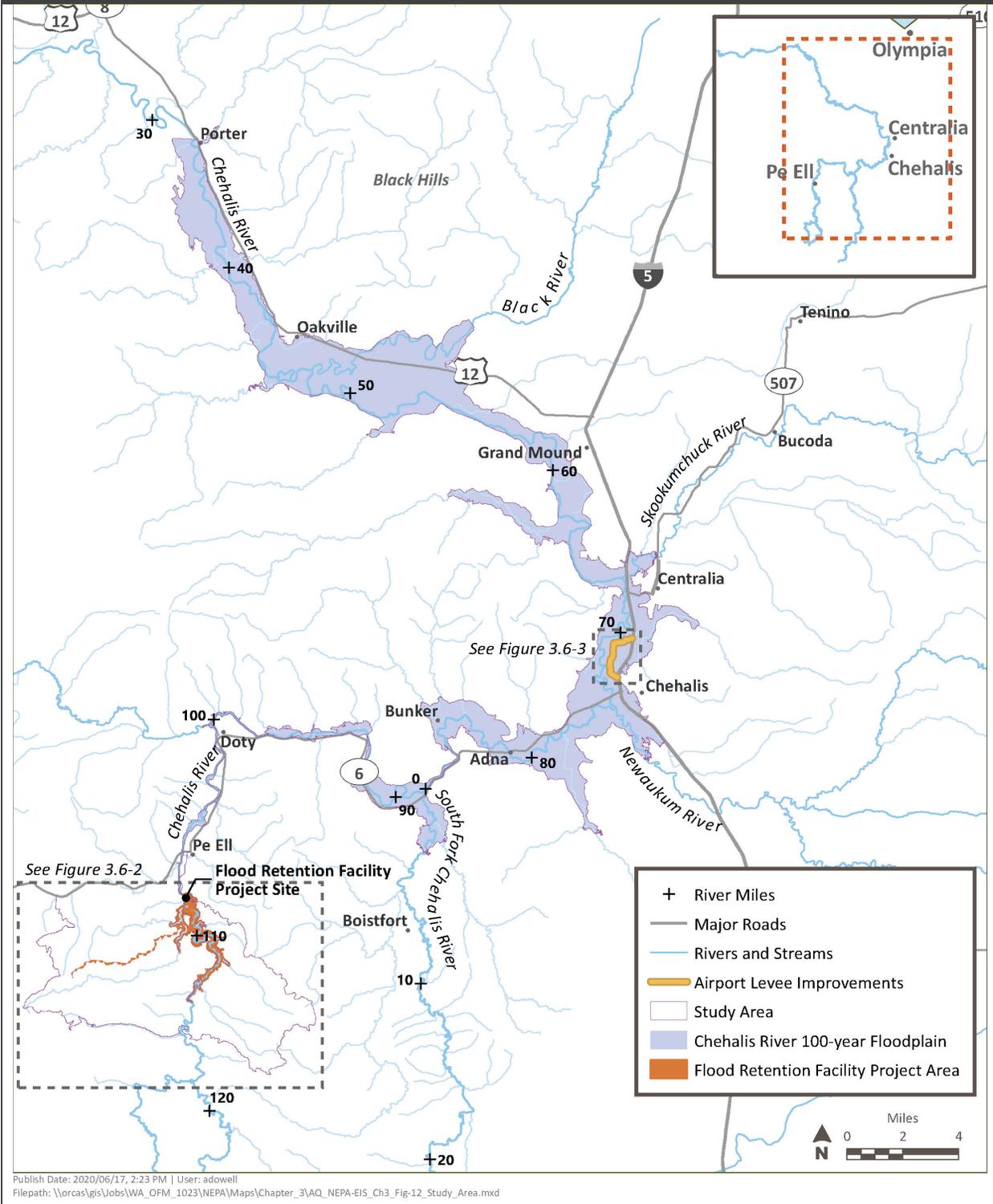
Per Section 404 of the Clean Water Act (CWA; 33 Code of Federal Regulations [CFR] 320-332), the Applicant must obtain Department of the Army (DA) authorization to construct the proposed project if it involves the discharge of dredged or fill material into waters of the United States. Waters of the United States generally include rivers, streams, lakes, marine waters, and wetlands. The U.S. Army Corps of Engineers, Seattle District (Corps) has jurisdiction over waters of the United States in the project area. The Corps will decide whether to issue, issue with conditions, or deny a permit for activities within the Corps' jurisdiction.

On January 31, 2018, the Corps determined the proposed project may have significant individual and/or cumulative impacts to the human environment. Therefore, this environmental impact statement (EIS) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (40 CFR 1500-1508; 33 CFR 325 Appendix B). Preparation of this Draft EIS and a future Final EIS will support the Corps' permit decision.

ES.2 Agency Coordination, Public Involvement, and Tribal Consultation

NEPA implementing regulations allow the lead agency (the Corps) to invite other federal agencies or federally recognized tribes to participate in the NEPA process as cooperating agencies. Cooperating agencies assist the lead agency by participating in the NEPA process as early as possible. They assist in developing information and preparing environmental analyses and make staff available to provide additional expertise for the analyses. The Corps invited the Quinault Indian Nation (QIN) who accepted but later withdrew as a cooperating agency. The U.S. Environmental Protection Agency (EPA) and Confederated Tribes of the Chehalis Reservation (Chehalis Tribe) were also invited to serve as cooperating agencies. EPA declined the invitation. The Chehalis Tribe did not formally respond as of the time of Draft EIS publication.

Figure ES-1
Study Area



The Corps invited local, state, and federal agencies, Native American tribes, organizations, and members of the public to comment on the scope of the EIS during a 31-day scoping period. Ecology conducted scoping for the Washington State Environmental Protection Act EIS process at the same time. The combined scoping period began September 28, 2018, and closed October 29, 2018. The Corps received verbal and written comments at in-person scoping meetings. Comments were also received by mail and online. These comments included concerns about fish and wildlife, vegetation, climate change, tribal resources, environmental health and safety, socioeconomics, and water quality. The Corps used these comments to help identify public concerns and define the scope of the EIS. Chapter 8 of the Draft EIS describes the process of consultation and coordination in more detail.

This Draft EIS was released for review and comment from members of the public; local, state, and federal agencies, Native American tribes, organizations; and the Applicant. The document is available online at <https://chehalisbasinstrategy.com/eis/nepa-process/>. Comments on this Draft EIS will be accepted for a 60-day comment period beginning when the Notice of Availability was issued in the Federal Register. Comments may be submitted in the following ways:

Online:

<https://chehalisbasinstrategy.com/eis/nepa-process/>

U.S. Mail:

Chehalis River Basin Flood Damage Reduction Project
c/o Anchor QEA
6720 South Macadam Street, Suite 125
Portland, Oregon 97219

Email:

chehalis@usace.army.mil

Online public hearings:

Dates and times provided in the Notice of Availability

ES.3 Purpose and Need

The purpose of the proposed project is to reduce the duration and level of flooding. This would in turn reduce the corresponding damage within the existing 100-year floodplain in the Chehalis/Centralia area from Adna to Grand Mound. The reduction in damage would be accomplished without causing increased flood damage in other areas. The proposed project is needed because flooding has caused major damage, substantial transportation delays, and high economic costs in the Chehalis Basin in the recent past.

ES.4 Alternatives

The Corps developed two-phase screening criteria to determine which alternatives would be evaluated in this Draft EIS. The first phase determined whether an alternative met essential criteria for flood damage reduction and did not substantially redirect negative flood impacts to other areas. The second phase determined whether alternatives were reasonably available to the Applicant. It also evaluated whether any of the alternatives would cause substantially greater impacts to the aquatic environment than other evaluated alternatives.

The Corps analyzed a total of 61 potential alternatives. The process of analysis and elimination of alternatives is described in detail in Chapter 3 and Appendix D of the EIS. Two action alternatives (Alternatives 1 and 2) and the No Action Alternative were carried forward for evaluation in the EIS.

ES.4.1 Alternative 1 (Proposed Project)

Alternative 1 is the Applicant's proposed project. Alternative 1 includes a flood retention expandable (FRE) facility (Figure ES-2) and Airport Levee Improvements.

The FRE facility would be built so its foundation could support a larger structure if the Applicant decided to increase the storage capacity in the future. Increasing storage capacity would require further environmental review.

The FRE facility would include a vertical concrete structure, an emergency spillway, a flip bucket, five gated outlets, a stilling basin, a fish passage facility, and a diversion tunnel to be used during construction. The gated outlets would be tunnels at the base of the vertical concrete structure. These gated outlets would allow water to flow through the facility during non-flood conditions. During major or greater floods, the gated outlets would close, and water would fill a temporary reservoir behind the FRE facility. The FRE facility would store up to 65,000 acre-feet of water in the temporary reservoir. After a flood, the gated outlets would open, and water from the temporary reservoir would slowly drain back into the river. When the gated outlets are partially closed, fish would be transported upstream using a trap and haul facility, which involves manually moving fish upstream. Under normal conditions, the gated outlets would stay open and the river would flow normally. Fish would be able to move upstream and downstream through the FRE facility.

The Airport Levee Improvements would include raising a part of the levee, which could require widening parts of the base, and replacing utility infrastructure.

Figure ES-2
Proposed Flood Retention Expandable Facility



ES.4.2 Alternative 2

The Flood Retention Only (FRO) facility and Airport Levee Improvement locations under Alternative 2 would be the same as under Alternative 1. The FRO facility design would also be the same as Alternative 1, except the facility would be built on a smaller foundation. The foundation for the FRO facility would be about 20 feet smaller in width than the FRE facility on the downstream (north) side. Unlike the FRE facility, the foundation would not be designed to allow for potential future expansion of flood storage capacity.

ES.4.3 No Action Alternative

Under the No Action Alternative, the Corps would not issue the requested DA permit under Section 404 of the CWA. This permit is necessary for the Applicant to construct the proposed project. The proposed project would not be constructed under the No Action Alternative. Other projects that are funded and permitted or are in the process of being constructed as of January 2019 are included in the No Action Alternative. It also includes other actions reasonably likely to occur during the EIS analysis period (2025 to 2080).

ES.5 Potential Impacts

ES.5.1 Study Area

The study area for this EIS includes the areas that would be affected by construction and operation of the action alternatives. Any differences are noted in the individual resource sections of Chapters 4 and 5. The study area includes three main areas (Figure ES-1):

- The flood retention facility project area
- The Airport Levee Improvements project area
- The Chehalis River 100-year floodplain area

The flood retention facility project area includes the site of the proposed flood retention facility and related facilities. This area extends from river mile (RM) 114 of the Chehalis River, the upstream end of the temporary reservoir, to approximately RM 108, the proposed location of the flood retention facility. It also includes upland areas that would be affected by construction, including the diversion tunnel site, construction staging and storage areas, excavation and grading areas, quarries, improved access roads, and spoil placement sites.

The Airport Levee Improvements project area includes the existing levee, areas likely to be used for construction staging, and access roads.

The Chehalis River 100-year floodplain component of the study area includes the parts of the floodplain likely to experience a reduction in flood elevation as a result of the action alternatives. This includes the 100-year floodplain from the proposed flood retention facility location at RM 108 downstream to RM 33 near Porter. The Chehalis River 100-year floodplain component of the study area does not include the Airport Levee Improvements project area.

ES.5.2 Methods

ES.5.2.1 Impact Levels

The analysis considers changes to the environment that would likely be because of the proposed project from 2030 to 2080. Impacts are changes to the existing environment that would be expected as a result of the proposed project and can be adverse or beneficial. In the EIS, adverse impacts are described as low, medium, or high. The determination is based on best professional judgment to provide a relative comparison for how impactful a change would be. Low impacts may or may not be readily noticeable while medium impacts would be. High impacts would be very noticeable and cause substantial problems for the environmental resource. Thresholds used to assess impact levels for each environmental resource are provided in Appendix E.

ES.5.2.2 Modeling

Some resource areas of the EIS relied on modeling to analyze the potential for certain impacts to occur. Modeling efforts focused on water resources, geomorphology, fish, air quality, noise, and socioeconomics. More information about the specific methods and results can be found in those sections of the Draft EIS. Models were based on the best available information but are not likely to represent a specific future outcome. This is mainly because there is much uncertainty in predicting future hydrologic conditions, such as how often and how much flooding may happen. The same modeling assumptions were made for all alternatives. This means the model results provide useful information to understand the relative impacts between Alternatives 1 and 2 and the No Action Alternative.

The modeling relied on hydrology data from the past 30 years as the best available information. Future climate conditions were not modeled in this EIS. However, it is generally accepted that precipitation patterns and air temperatures in the Chehalis Basin will differ in the future compared to the data used in modeling. If there is more precipitation in the future, it is possible that the proposed flood retention facility would operate more frequently. Impacts associated with single floods would be more frequent. Depending on how environmental resources were affected by climate variability over time, it is possible that the operational impacts of the flood retention facility would also differ.

ES.5.2.3 Flooding

Because it is not possible to predict the timing or extent of future flooding, the analysis of operational impacts generally considered two flood scenarios. These include the major flood, which would happen on average once every 7 years, and catastrophic flood, which would happen on average once every 100 years. For the purposes of the impact analysis, the EIS generally assumes that the flood retention facility would operate on average once every 7 years, which is the average predicted frequency of a major flood. However, where there were differences in predicted impacts between the scenarios, the analysis was based on the most impactful scenario. For example, the analysis of impacts to aquatic species and habitat discusses the impacts from a back-to-back flood. This is a scenario where a major flood one year would be followed by a catastrophic flood the next year.

ES.5.3 Impacts to the Natural and Built Environment

Potential impacts to the natural and built environment are summarized in Table ES-1. Chapters 4 and 5 include more detail about the impacts. The impacts are shown for the No Action Alternative and Alternative 1 construction and operation. Adverse impacts are identified as low, medium, or high. Beneficial impacts are identified, but the level of impact is not. The impacts apply to the study area unless otherwise specified. When a range of impact levels is shown, it is because there are differences depending on which part of a resource is affected.

Downstream impacts refer to the Chehalis River 100-year floodplain area.

The impacts from Alternative 2 are not included in Table ES-1 because they are very similar to Alternative 1. The construction impacts would be the same with two exceptions. The flood retention facility base would be smaller and the construction period would be shorter under Alternative 2. This means related impacts would affect a smaller area and not last as long as compared to Alternative 1. The impacts from the Airport Levee Improvements and overall operation would be the same as Alternative 1.

The main construction impacts from Alternative 1 would be from the proposed FRE facility. This is because construction would require substantial earthwork, blasting, and dewatering the Chehalis River. Activities would last for up to 5 years and result in the permanent loss of 1.23 acres of wetlands, 4.8 acres of other waters, and 11.2 acres of associated buffers. Construction would also affect aquatic species and habitat by temporarily and permanently reducing the amount and quality of aquatic habitat in this area. Salmon and lamprey would experience the highest impacts because fish passage would be reduced and access to upstream habitat would be blocked. Blasting and construction noise would also affect fish and wildlife that may be present. Pre-construction vegetation management would remove streamside trees and terrestrial habitat in the footprint of the temporary reservoir. It was assumed that other trees would not regrow. This loss would cause high impacts to water quality, fish, wildlife, and wetlands and other waters.

Impact Indicators

- ↑ = beneficial impact
- ↓ = low adverse impact
- ↓ ↓ = medium adverse impact
- ↓ ↓ ↓ = high adverse impact

The main operational impacts would also come from the proposed FRE facility. The FRE facility would be operated to hold back floodwaters in the temporary reservoir when a major or greater flood was likely to happen in the Chehalis/Centralia area. This would be a beneficial impact to downstream communities that have experienced extensive flood damage in the recent past. While the temporary reservoir was holding water, there would be a loss of aquatic and terrestrial habitat in that area. This would cause high impacts to fish and wildlife in the year when the FRE facility was operating. There would also be high impacts to the natural environment over the long term. This is mainly because of reduced fish passage conditions using the trap-and-haul facility, and because of aquatic and terrestrial habitat degradation over time. The lack of major or greater flooding in the system would limit the migration of the river channel in the floodplain, and would change riverbed characteristics of the Chehalis River over time.

The Airport Levee Improvements would be able to be built in a way that would keep impacts low. Operation would be very similar to existing conditions and would result in no to low impacts.

Table ES-1
Summary of Potential Impacts

ENVIRONMENTAL RESOURCE	NO ACTION ALTERNATIVE		ALTERNATIVE 1 CONSTRUCTION		ALTERNATIVE 1 OPERATIONS	
	Water Quantity and Quality	↓ to ↓↓↓↓ ↓ to ↓↓↓↓ ↓↓↓ ↓ ↓	river flows, including continued flooding risk floodplain function, including continued flooding risk water quality (continued) groundwater quantity available water for other users	↓ ↓ to ↓↓ ↓ to ↓↓↓↓ ↓ ↓ ↓ ↓↓	river flows floodplain function water quality groundwater quantity and quality available water for other users City of Pe Ell's water supply system	↓ ↓ ↓ to ↓↓↓↓ ↓ ↓↓
Geology and Geologic Hazards	↓ to ↓↓↓↓ ↓ ↓	soil erosion, including continued flooding risk landslide risk earthquake hazard risk	↓ to ↓↓ ↓↓ ↓ ↓	soil erosion bedrock removal landslide risk earthquake hazard risk	↓ to ↓↓↓↓ ↓ to ↓↓ ↓↓↓ ↓	soil erosion landslide risk (↓↓↓ during floods) earthquake causing FRE facility failure waves or induced shaking in temporary reservoir
Geomorphology	no to ↓↓↓↓ no to ↓↓↓↓ no to ↓↓↓↓	sediment loading and transport, including continued flood risk LWM input and transport, including continued flood risk channel movement, including continued flood risk	↓ to ↓↓↓↓ ↓ to ↓↓↓↓	sediment loading and transport (↓↓↓ during floods) LWM input and transport	↓ to ↓↓↓↓ ↓↓ to ↓↓↓↓ no to ↓↓	sediment loading and transport LWM input and transport channel movement
Wetlands and Other Waters	↓ ↓	wetlands other waters	↓ to ↓↓↓↓ ↓ to ↓↓↓↓	wetlands other waters	↓ to ↓↓ ↓ to ↓↓	wetlands other waters
Aquatic Species and Habitats	no to ↓↓ ↓↓ to ↓↓↓↓ ↓ to ↓↓↓↓ ↓ to ↓↓ ↓ to ↓↓↓↓ ↓	habitat, including continued flood risk (small-scale ↑) coho salmon steelhead (some ↑ for coho downstream) spring-run and fall-run Chinook salmon lamprey, other native fish, mussels, and aquatic plants salmon at the Chehalis Basin scale (↑ steelhead) marine mammals outside the study area	↓ to ↓↓↓↓ ↓↓↓ ↓↓↓ ↓ to ↓↓ ↓ to ↓↓↓↓ ↓	habitat coho salmon, spring-run and fall-run salmon, steelhead lamprey other native fish, mussels, and aquatic plants salmonids at Chehalis Basin scale marine mammals outside the study area	↓ to ↓↓↓↓ ↓↓↓ ↓↓↓ ↓ to ↓↓ ↓ to ↓↓↓↓ ↓	habitat coho salmon, spring-run and fall-run salmon, steelhead lamprey other native fish, mussels, and aquatic plants salmonids at Chehalis Basin scale marine mammals outside the study area
Terrestrial Species and Habitats	↓ to ↓↓↓↓ ↓ to ↓↓↓↓	habitat, including continued flood risk (small-scale ↑) wildlife, including continued flood risk (small-scale ↑)	↓↓ to ↓↓↓↓ no to ↓↓↓↓	habitat wildlife	↓↓ to ↓↓↓↓ no to ↓↓↓↓	habitat wildlife
Air Quality	↓	criteria pollutant emissions, including continued flood risk	↓ ↓	criteria pollutant emissions fugitive dust and odors	↓ ↓	criteria pollutant emissions fugitive dust and odors
Visual Quality	↓ ↓↓↓	visual impacts (small-scale ↑) visual impacts from continued flood risk	↓ to ↓↓	visual impacts	↓ to ↓↓ ↑	visual impacts reduced downstream flood damage
Noise and Vibration	↓	noise	↓ to ↓↓	noise	↓	noise
Land Use	↓ ↓↓↓	land use incompatibility land use disruption from continued flood risk	↓ to ↓↓	land use incompatibility	↑ ↓	reduced flood damage increased growth
Recreation	↓ ↓ to ↓↓↓↓	disruption (small-scale ↑) disruption from continued flood risk	↓ to ↓↓↓↓	disruption	no to ↓↓↓↓ ↑	disruption reduced downstream flood damage

Notes: ↓= low adverse impact, ↓↓= medium adverse impact, ↓↓↓= high adverse impact, ↑= beneficial impact where the level was not identified.

ENVIRONMENTAL RESOURCE	NO ACTION ALTERNATIVE		ALTERNATIVE 1	
			CONSTRUCTION	OPERATIONS
Cultural Resources	↓ to ↓↓ ↓ to ↓↓↓	cultural resources damage from continued flood risk	↓↓↓ cultural resources	↓↓↓ to ↓↓↓↓ ↑ cultural resources reduced downstream flood damage
Transportation	↓ ↓ ↓ to ↓↓↓	traffic roads traffic and damage from continued flood risk	↓ ↓ traffic, including pedestrians, cyclists, airport use roads (some ↑ long-term improvements)	no to ↓ ↓ ↑ traffic, including pedestrians, cyclists, and airport use roads (some ↑ long-term) reduced downstream flood damage and traffic delays
Public Services and Utilities	↓ to ↓↓ ↓ to ↓↓ ↓↓	increased demand for services, including continued flood risk infrastructure, including continued flood risk emergency service response, including continued flood risk	↓ ↓↓ increased demand for services City of Pe Ell's water supply system	↓ ↓↓ ↑ increased demand for services City of Pe Ell's water supply system emergency service response from reduced flood risk
Environmental Health and Safety	↓ to ↓↓ ↓ to ↓↓	hazardous materials exposure, including continued flood risk public worker safety risks, including continued flood risk	↓ to ↓↓ ↓ to ↓↓ hazardous materials exposure public and worker safety risks	no to ↓ no to ↓ ↑ hazardous materials exposure public and worker safety risks reduced downstream flood risk
Socioeconomics	↓ ↑ ↑ ↓ to ↓↓↓	population and housing income and employment government revenues ecosystem services, including continued flood risk	↓ to ↓↓ ↑ ↑ ↓↓↓ to ↓↓↓↓ population and housing income and employment government revenues ecosystem services	↑ ↑ ↓↓↓ income and employment, including reduced flood risk government revenues, including reduced flood risk ecosystem services
Environmental Justice	↓↓↓ to ↓↓↓↓	natural resource impacts, including continued flood risk	↓↓↓ ↓ natural resource impacts air/noise impacts	↓↓↓ ↑ natural resource impacts reduced downstream flood risk

Notes: ↓= low adverse impact, ↓↓= medium adverse impact, ↓↓↓= high adverse impact, ↑= beneficial impact where the level was not identified.

ES.5.4 Cumulative Impacts

The cumulative impacts of the proposed project on each resource area analyzed in the Draft EIS are discussed in detail in Chapter 6. The proposed project would not contribute to cumulative impacts for all aspects of these resource areas. In some cases, the proposed project would result in a beneficial impact. Impacts from the proposed project would contribute to substantial adverse cumulative impacts to some portions of the study area for the following resource areas:

- Water quality and quantity
- Geology and geologic hazards
- Aquatic species and habitats
- Terrestrial species and habitats
- Cultural resources
- Socioeconomics
- Environmental justice

ES.6 Mitigation

Mitigation measures are measures used to avoid, minimize, or compensate for adverse environmental impacts from the proposed project. This includes measures proposed by the Applicant and those that may be required by the Corps. Chapter 7 of the Draft EIS identifies specific and conceptual mitigation measures. The development of mitigation will continue through the entire NEPA and permit application review process. Mitigation measures may change based on comments received on the Draft EIS.

ES.7 Next Steps

The Draft EIS was circulated for a 60-day public comment period beginning with the issuance of the Notice of Availability in the Federal Register. After the comment period, the Corps will prepare and circulate a Final EIS that will identify the alternative(s) that are considered to be environmentally preferable. The Final EIS will include a response to comments on the Draft EIS. The Corps will then prepare a Record of Decision (ROD) to document the Corps' permit decision for the proposed project, supported by the analysis in the Final EIS. The ROD will conclude the Corps' NEPA process.