

5.2 No Action Alternative

5.2.1 Overview

The No Action Alternative is intended to represent the most likely future expected in the absence of implementing an action alternative. Under the No Action Alternative, actions to address flood damage and aquatic species habitat improvements in the Chehalis Basin would continue at reduced levels as compared to the action alternatives. As such, the No Action Alternative would result in the least reduction in flood damage during major floods, and least benefit to aquatic species habitat function.

Under the No Action Alternative, existing activities, programs, and trends in the Chehalis Basin would continue. Because the No Action Alternative does not involve a coordinated and integrated approach, benefits are likely to be localized and minimal throughout the Chehalis Basin.

5.2.2 Long-term Impacts

For the purposes of this EIS, a summary description of long-term minor adverse impacts or benefits resulting from No Action Alternative is provided relative to the following elements of the environment: water resources, geology and geomorphology, wetlands and vegetation, and fish and wildlife. Those actions anticipated to result in moderate to significant adverse impacts are described in more detail in the sections that follow.

5.2.2.1 *Environmental Elements with Minor Adverse Impacts or Benefits*

While there could be incremental benefits from implementation of the No Action Alternative, these benefits would likely be outweighed at a Basin-wide scale by the adverse impacts that occur during the next major flood and continued degradation of aquatic species habitat.

For example, surface water quality could be improved under existing programs like Ecology's Water Quality Program and by ongoing localized flood damage reduction and aquatic species habitat restoration projects that are currently underway. These projects could affect water quality through funding projects that improve it, and through protecting properties where there is a risk of pollutants entering nearby waterbodies (e.g., WWTPs) during a flood. However, flood-related spills or leaks of toxic or hazardous materials and pollutants from developed areas would continue during major floods. Major floods would also continue to create instability on steep slopes and potentially trigger localized landslides, resulting in minor adverse impacts on geology. There could be limited reductions in flood extents, floodwater depths, and floodwater velocities due to smaller-scale shoreline stabilization, levee placement, and bridge and culvert replacements projects; however, minor adverse impacts on geomorphology and fish and wildlife could occur if these activities reduce channel migration, deflect flow energy, and impair riparian habitat.

With regard to fish, flooding is part of a natural flow regime and native fish have adapted to these conditions. Flooding provides access to temporary foraging habitats in the floodplain and supplies

nutrients to riparian vegetation that in turn provides shade, cover, and additional food sources to fish. However, major floods, especially repeated major floods, can contribute to impairment of habitats due to large-scale erosion and deposition of fine sediment in spawning and rearing areas, including scouring of recently laid redds or scouring of features that provide habitat complexity—both of which would be detrimental to fish.

Wildlife in the Chehalis Basin also likely exhibit some degree of adaptation to flooding. Although floods can benefit wildlife over the long term by creating new habitat conditions and modifying vegetation communities, repeated major floods, such as those experienced in the Chehalis Basin in recent years, can result in detrimental effects to wildlife. Potential adverse impacts include direct mortality of species unable to flee floodwaters such as small, less-mobile animals, young animals, and ground-nesting birds; destruction of nests and dens; displacement of wildlife to upland habitats where they may face increased competition for basic resources from both other animals and humans, increased mortality, or reduced reproductive success; and the destruction or alteration of wildlife habitat by scouring, prolonged inundation, sediment and woody material deposition, and large-scale erosion.

The potential adverse impacts on wetlands and vegetation from ongoing flood damage reduction actions are primarily related to direct impacts from the construction of new facilities or infrastructure. Adverse impacts could include permanent loss of wetlands and vegetation, modification of wetland hydrology, and potential disconnection of the floodplain. Overall, due to the limited scope of these actions and the likely location around developed areas, such impacts on wetland and vegetation would likely result in minor adverse impacts at a Basin-wide scale.

Ongoing habitat restoration actions would provide some benefits to water resources, geomorphology, and fish and wildlife by protecting and restoring riparian areas and floodplain habitat in certain areas, but benefits would be localized and provide minor overall benefits at a Basin-wide scale. Continued implementation of No Action Alternative measures (e.g., near-term habitat restoration projects; SRFB projects; and CREP, CFRP, FFFPP, and WSDOT fish passage programs) would provide some benefits to fish; however, these benefits are also anticipated to be localized and minor in a Basin-wide context. These benefits include the following:

- Reductions in water temperatures with the creation of cool-water habitats (i.e., deep pools) and restoration of riparian habitat
- Localized reductions in turbidity and sediment delivered to stream channels resulting from restoring natural erosion rates to reduce bank erosion
- Improvements in channel complexity and improved geomorphic function with the addition of restoration features such as large wood that affects transport and distribution of coarse substrate
- Beneficial increase in nutrient concentrations in streams that are restored with improved fish habitats

- Restoration of flow conditions and improved fish passage as a result of culvert removal or replacement activities
- Enhanced wetland habitats, and increased wetland function

The No Action Alternative includes salmon habitat potential benefits from the maturation of riparian areas in managed forestland compared to current conditions. In contrast, the action alternatives include benefits from managed forestland, as well as active restoration in the lowlands (included within the Aquatic Species Habitat Action), compared to current conditions. Modeled results of salmon habitat potential for Alternatives 1 and 4 are provided in Sections 5.3.2 and 5.3.3 (Alternative 1) and Section 5.6.2 and 5.6.3 (Alternative 4).

Adverse impacts on fish under the No Action Alternative would result from continued impairment to fish habitat and habitat requirements, as described in Section 3.4 (see Bjornn and Reiser 1991; Wampler et al. 1993; Envirovision 2000; Smith and Wenger 2001; GHLE 2011; and ASEPTC 2014a for suites of habitat impairments by sub-basin). Compared to its historical potential before European settlement, the current habitat is estimated to be 54% impaired for fall-run Chinook salmon, 56% impaired for winter-run steelhead, 72% impaired for coho salmon, and 87% impaired for spring-run Chinook salmon (ASEPTC 2014a). The scope of restoration planned under the No Action Alternative would be limited and result in minor, with generally localized benefits; however, the changes would likely not be sufficient to restore reaches of Chehalis Basin rivers and streams in a way that substantially improves salmon abundance. These changes would also provide minor benefits to wildlife species that breed, forage, rest, and overwinter in these habitat conditions, particularly semi-aquatic species such as amphibians. These minor benefits are not likely to be adequate to overcome the significant adverse impacts resulting from projected climate change (see Section 5.2.2.3).

Forest practices would continue to affect streamflow and landslides within the Chehalis Basin, as described in Section 3.1.2. Any changes to forest management practices are not anticipated to reduce the frequency of extreme flooding in a watershed the size of the Chehalis Basin (Perry et al. 2016).

5.2.2.2 Tribal Resources

Under the No Action Alternative, Aquatic Species Habitat Actions could provide minor beneficial effects on tribal resources, as described in Section 5.2.2.1. However, localized flood damage reduction actions could result in adverse impacts on treaty rights, primarily related to fish. The nature of potential impacts on tribal resources is pending additional coordination with tribes and continued government-to-government consultations.

Activities that impede the ability to exercise treaty rights (e.g., impaired access to resources or actions that harm resources or the habitat on which they are dependent) constitutes taking a property right that has been guaranteed to treaty tribes. Impairment or elimination of fish habitat used by fish (eggs, juveniles, and adults) could affect their survival. These activities could also affect behavior of adult or

juvenile fish such that some are unable to successfully complete their life cycle and contribute to spawning for the next generation.

Tribal fishers could be temporarily delayed or restricted from accessing the Chehalis River and its tributaries during some construction activities. Access to traditional plants and hunting of wildlife could also be affected by construction activities. Based on feedback from the Quinault Indian Nation, impacts on tribal resources could occur from disturbance resulting from flood damage reduction actions that include installation of hard banks (e.g., riprap and sheetpile). The excavation, channel re-routing, and other activities related to installation of levees and other hard bank proposals could result in short- and long-term losses to fish production (Sharp 2016a, 2016b).

Temperature and habitat constraints, which are of particular concern for spring-run Chinook salmon, would continue in the long term. It is likely tribal fisheries would continue to be focused on fall-run salmon entering the Chehalis River (coho, fall-run Chinook, and chum) and on winter steelhead. It is anticipated that spring and early summer harvests by Quinault Indian Nation and Chehalis Tribe fishers on Chinook salmon would be limited, consistent with trends in recent years. Spring and summer harvests of sturgeon by tribal fishers would continue to be managed to avoid impacts on a low abundance of spring- and summer-run Chinook salmon returning to the Chehalis Basin. The significant adverse impacts of climate change (see Section 5.2.2.3) would result in decreased salmonid abundance, and could result in further impacts on tribal resources.

5.2.2.3 Climate Change

Without an integrated strategy, actions under the No Action Alternative would be implemented in a piecemeal fashion. An uncoordinated approach could reduce the potential to formulate and adapt flood damage reduction and aquatic species habitat restoration strategies that are capable of adjusting to changing climatic conditions.

As discussed in Section 3.7, the effects of climate change would alter temperatures, precipitation, wind, sea levels, streamflow, water temperatures, and forest compositions. By mid-century, rainfall events are projected to become more severe, summer streamflows are projected to decrease, and annual variability would continue to cause some periods that are abnormally wet and others that are abnormally dry (ASEPTC 2014c; Mauger et al. 2016). Anticipated effects of climate change on the No Action Alternative are described as follows and, collectively, are expected to result in significant adverse impacts.

Geology and Geomorphology

Under the No Action Alternative and when considering climate change, potential increases in channel erosion and incision, bank instability and erosion, and lateral bank migration could result from the projected increase in the number and severity of high-flow events. Increases in winter precipitation would likely contribute to landslides on slopes saturated by rainfall or runoff (Mauger et al. 2016).

Water Resources

Under the No Action Alternative and when considering climate change, projected increases in temperatures and decreases in summer precipitation would likely result in increased temperatures in rivers and streams. With increased temperatures in rivers and streams, there would likely be increased algal production and decreased DO levels. Projected increases in temperature, decreases in summer precipitation, more intense winter rain, and reduced snow retention would likely result in decreased rates of summer instream flow (Mauger et al. 2016). With the reduced availability of water and inability to meet minimum instream flow requirements, there would be an increased frequency of interruptions in diversions and effects to water rights. There could also be potential changes in alluvial aquifer levels.

Increased peak flows and frequency of winter storms would result in more frequent and greater flood damage. Additionally, sea level rise would increase flooding in areas adjacent to Grays Harbor (e.g., Aberdeen, South Aberdeen, Hoquiam, Westport; Mauger et al. 2016).

Wetlands and Vegetation

Sea level rise would likely result in a shift from tidal swamps supporting woody vegetation to irregularly flooded marshes consisting of non-woody vegetation. There would be a loss of trees from saltwater intrusion into the lower Chehalis River, and a loss of low-elevation tidal mud and sand flats.

Warmer and drier summers would likely result in a shift in forest composition to increased hardwoods and fewer Douglas firs, and increased numbers and extent of wild fires. With longer-term shifts in forest types and species, there could be increased insect and tree disease outbreaks.

Fish and Wildlife

Projected increases in temperature in rivers and streams as well as a decrease in summer precipitation would likely result in decreased abundance of cold water-associated fish, such as salmon and steelhead. As shown in Table 5.2-1, future conditions as a result of climate change under the No Action Alternative would have the greatest impact on spring-run Chinook salmon and the least impact on winter- and fall-run chum salmon. Chum salmon would be least affected by climate change because of their late-season entry into freshwater in the fall after water has cooled and precipitation has increased (ICF 2016).

Table 5.2-1
Potential Response in Salmon Abundance in the Chehalis Basin to Climate Change

SPECIES (CURRENT HABITAT POTENTIAL)	CHANGE FROM CURRENT CONDITION IN NUMBER OF FISH (%)
Coho salmon (40,642)	-22,390 (-55%)
Fall-run Chinook salmon (25,844)	-6,969 (-27%)
Winter/fall-run chum salmon (190,550)	-8,270 (-4%)
Spring-run Chinook salmon (2,146)	-1,869 (-87%)
Winter-run steelhead (6,800)	-3,741 (-55%)

Depending on projected changes in climate, spring-run Chinook salmon could be nearly extirpated from the Chehalis Basin, or have substantially reduced populations, primarily as a result of assumed increases in summer water temperature (ICF 2016). Analysis also showed five subpopulations of spring-run Chinook salmon and one subpopulation of winter-run steelhead could be extirpated from the Chehalis Basin as a result of climate change under the No Action Alternative. NMFS and USFWS are responsible for assessing the possible listing of salmonids under Section 4 of the ESA and would initiate an ESA-listing proposal for endangered or threatened species. The analysis of climate change impacts on fish and wildlife under the No Action Alternative does not include future actions that could occur as a result of ESA listings.

Negative impacts on spawning and rearing habitat for other cold-adapted fish, such as mountain whitefish, and non-fish aquatic species could occur due to increases in summer water temperature (ASEPTC 2014c). Beneficial effects on spawning and rearing habitat for warm-adapted fish and non-fish aquatic species, such as Pacific lamprey, largemouth bass, smallmouth bass, speckled dace, largescale sucker, and western toad, could occur due to increases in summer water temperature (ASEPTC 2014c). The adverse impacts of sea level rise would shift fish species composition in the lower Chehalis River as saltwater extends farther upstream.

In addition to affecting fish, projected increases in water temperature, changes in seasonal flows, and the upstream extension of saltwater in the Chehalis Basin would adversely affect stream- and stillwater-breeding amphibians, including western toad, by constraining or potentially eliminating suitable breeding and foraging habitat for these species. Terrestrial amphibians including Dunn’s salamander and Van Dyke’s salamander could also be affected by increased summer air temperatures and changes in precipitation patterns. Other wildlife including mammals, reptiles, and birds could also be affected by climactic changes and would be subjected to the loss of breeding and foraging habitat due to changes in seasonal flooding, sea level rise, wetland and mudflat/sandflat conversion, tree loss, and vegetation community changes. Reduction in food sources, especially for those wildlife that rely on salmon carcasses for a part of their diet, could also occur—as could increased competition for other basic life resources as species relocated to find more suitable habitats.

Air Quality

Decreased summer precipitation and increased wild fires with climate change are likely to adversely affect air quality under the No Action Alternative.

Built Environment

Continued rise in sea level, more intense heavy winter rains, decreased summer precipitation, and increased wildfire activity as a result of climate change could result in the following effects to the built environment under the No Action Alternative:

- **Land Use** – Increased impacts on structures and agriculture due to increased flooding and shoreline inundation
- **Transportation** – Increased flooding and shoreline inundation, which would result in increased transportation closures, delays, or detours for facilities and transportation lines located in or near coastal and low-lying areas, as well as facilities located in or near current floodplains
- **Recreation** – Increased flooding impacts on park facilities located within the floodplain and low-lying areas
- **Historical and Cultural Preservation** – Potential increased impacts on cultural resources from increased flooding and inundation
- **Public Services and Utilities** – Increased flooding impacts on public service and utility facilities located within the floodplain due to increased peak flow and frequency of winter storms, resulting in more frequent and greater flood damage
- **Environmental Health and Safety** – Impacts on emergency response services would continue during floods due to closures of I-5 and local roads that are impassible during major floods
 - Flood conditions would increase and more frequent major floods would increase the potential for contamination of wells and surface water

5.2.2.4 Land Use

Landowners could choose to relocate homes and businesses outside of the floodplain to avoid damages. More than 1,360 high-value structures susceptible to flooding within the Chehalis River floodplain—approximately 56% residential, 26% commercial, and 18% agricultural—would remain vulnerable under the No Action Alternative and could incur flood damages (see Appendix L), resulting in a significant adverse impact. Agricultural losses to crops and livestock from flooding would continue, although livestock losses would be lessened by farm pads that have already been constructed. Under the No Action Alternative, it is anticipated that development would progress in much the same way as it has in the past (see Appendix L).

During the next 100 years, population growth in the Chehalis River floodplain could result in the development of 407 to 914 new residential and commercial/industrial structures (approximately 4 to 9 structures per year). These structures would be distributed throughout all three counties in the

Chehalis River floodplain, with the highest portion of this development expected in Lewis County because that is where the most vacant or subdividable parcels in the floodplain exist. Most of the potential development associated with the No Action Alternative would occur as residential structures in Lewis County, likely in incorporated and Urban Growth Areas (UGAs) in Chehalis and Centralia (see Appendix L).

The cities of Aberdeen and Hoquiam recently joined together to create a Coastal Resiliency Master Plan—the Timberworks Master Plan—which would identify multiple-benefit projects that can reduce flood risk, improve fish habitat, and increase public open space and recreation opportunities. Initiation of this project occurred in November 2015 and the long-term effect on land use is undetermined.

Agricultural losses to crops and livestock from flooding would continue, although livestock losses would lessen to some degree by farm pads that have been constructed since the 2007 flood. Farm pads and excavation routes that are currently funded, or are completed through 2017, would likely reduce the risk of adverse impacts on livestock from flooding. Funding for farm pads and excavation routes after 2017 is uncertain under the No Action Alternative. Ultimately, flooding would continue to cause significant adverse impacts on agricultural lands and infrastructure in the floodplain.

5.2.2.5 Recreation

The habitat restoration actions included in the No Action Alternative would not substantially improve fish abundance (see Section 5.2.2.1) and recreational fishing opportunities would continue to decline. Flooding at parks and other recreational facilities throughout the Chehalis Basin would not be substantially reduced through implementation of flood damage reduction actions included in the No Action Alternative. Floods would continue to affect structures and facilities within recreation areas, and access roads and bridges to recreational facilities (such as Rainbow Falls State Park and the Willapa Hills Trail) would remain at risk of being damaged by floodwaters. This would cause moderate adverse impacts because floods would continue to displace recreational uses until floodwaters recede and could cause long-term loss of access.

If farm pads provide high ground to protect livestock and equipment at agricultural operations used for agritourism, this would provide beneficial effects. As stated in Section 5.2.2.4, major floods would continue to have significant adverse impacts on agricultural lands and infrastructure in the floodplain.

5.2.2.6 Historic and Cultural Preservation

Potential short- and long-term impacts on historic and cultural resources include the following:

- Destruction, damage to, or alteration of a cultural resource
- Necessary removal of a cultural resource from its original location
- Changes to the use or physical features of a cultural resource

- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the significant features of a cultural resource

Although few large-scale projects are likely to be constructed under the No Action Alternative, WSAPM identifies the Chehalis River and watershed as primarily at a moderate to very high risk, with completion of an archaeological survey highly advised or recommended.

Although the degree or severity of the impact would depend on the nature of cultural resources that would be disturbed, moderate to significant adverse impacts on cultural resources could occur due to the predicted archaeological potential. Impacts on cultural resources associated with the No Action Alternative are related to the following:

- Required ground disturbance related to construction and implementation of actions under the No Action Alternative
- Increased channel mobility and resulting stream channel changes and subsequent erosion
- Additional, increased, or changed vehicular and foot traffic patterns
- Different flood patterns or increased peak flows under climate change, which could cause flooding and sedimentation of submerged resources in other areas, change stream channels and cause erosion, and change the streambank locations and result in bank erosion

Potential impacts on tribal cultural resources or graves, Indian human remains, or traditional cultural properties may also occur, and would be determined in coordination with tribes, and continued government-to-government consultations.

5.2.2.7 *Transportation*

Significant adverse impacts on transportation would occur due to the continuation of the following conditions during major floods:

- Closures of I-5 (currently 4 days during 100-year floods) requiring use of WSDOT's detour route (see Section 3.13; WSDOT 2014)
- Closures of SR 6, US 101, and US 12, and flooding of local roadways would continue
- Flooding within the Chehalis-Centralia Airport, which would restrict flights and use of the airport for emergency response
- Flooded rail lines, including BNSF, Union Pacific, and the Curtis Industrial Park line

5.2.2.8 *Public Services and Utilities*

Projects included in the No Action Alternative would not significantly reduce flooding, and public service facilities and utilities located within the floodplain would continue to be adversely affected by floods. Significant adverse impacts could continue to occur under the No Action Alternative due to damaged

utility infrastructure, interrupted utility services, and temporary service outages while providers work to repair damage and restore service.

5.2.2.9 Environmental Health and Safety

Significant adverse impacts on environmental health and safety could continue to occur due to the continuation of the following conditions during major floods:

- Closures of I-5, SR 6, US 12, US 101, and local roads during major floods, reducing emergency response time
- Siting of critical facilities in the floodplain as part of future development, which could also adversely affect emergency response
- Contamination of wells and surface water

5.2.3 Mitigation

Mitigation for unavoidable adverse impacts that occur as a result of projects implemented under the No Action Alternative would be project-specific, and therefore must be identified on a project-level basis. Compensatory mitigation for impacts on wetlands, vegetation, fish, and wildlife that occur as a result of project-related actions would be similar to mitigation described in Chapter 4 for smaller-scale elements such as levees and Local-scale Flood Damage Reduction Actions, as well as for the Aquatic Species Habitat Actions.

Acquisition and restoration of floodplain areas or streambanks of equivalent size or habitat function for fish could be implemented if a project is found to impair habitat for sensitive species.

The potential mitigation associated with project-related impacts on tribal resources would be addressed directly with tribal leadership during project-level environmental review and consultations, as described in Section 4.2.5. Mitigation of impacts on treaty rights is subject to consideration and agreement by the Quinault Indian Nation.

Mitigation measures for project-related adverse impacts on historic and cultural resources would be determined during project-specific evaluations of activities implemented under the No Action Alternative, as described in Section 5.2.2.6.

Significant unavoidable impacts are identified under the No Action Alternative that are not project-related; rather, these impacts are due to the ongoing and increasing effects of climate change and associated flood damage, as well as habitat degradation. These impacts are not triggered by a specific project and without a comprehensive program, such as the Chehalis Basin Strategy, would be less likely to be addressed in a coordinated manner in the future.