

5 COMBINED ALTERNATIVES: IMPACTS AND MITIGATION

5.1 Introduction

This chapter describes the potential long-term impacts of the combined alternatives as compared to the No Action Alternative, as well as potential compensatory mitigation measures for unavoidable significant adverse impacts. Specific short- and long-term impacts and mitigation associated with each action element, which are combined into the alternatives described in this chapter, are provided in Chapter 4. Because Chapter 4 provides a more detailed analysis for each action element, Chapter 5 focuses on those adverse impacts that are likely to be significant for each combined alternative. Cumulative impacts of the combined alternatives are described at the end of this chapter.

The extent to which the No Action Alternative and action alternatives meet the Chehalis Basin Strategy objectives is also described in Chapter 5. This strategy is intended to maximize the benefits of flood damage reduction and aquatic species habitat actions over the short and long term, while avoiding and minimizing environmental, social, cultural, agricultural, and economic impacts. Because each of the action alternatives would be implemented as part of a comprehensive package, a climate change analysis that considers the combined impacts of flood damage reduction and aquatic species habitat actions under each alternative is also included in this chapter.

Chehalis Basin Strategy Objectives

Reduce the following conditions caused by a major flood:

- Threats to human health and safety, including access to critical medical facilities
- Flood damage to commercial and residential properties
- Flood damage to agricultural properties, livestock, and crops
- Disruption in transportation systems, including closures of I-5 and local and regional transportation systems
- Disruption to industry, commercial businesses, and public services

Protect and restore aquatic species habitat function to:

- Improve resiliency of natural floodplain processes and ecosystems from the effects of climate change, including warming stream temperatures, low flows, and other effects
- Increase abundance of native aquatic species, including increased populations of healthy and harvestable salmon and steelhead
- Reduce the potential for future ESA listings
- Enhance tribal and non-tribal fisheries

The Chehalis Basin Strategy is intended to be implemented as a coordinated plan and phased over time. If a combined alternative identified in this EIS moves forward, the resulting actions would be subject to project-level environmental review before being approved for implementation. The process for this environmental review is described in Section 1.5. For actions included in the No Action Alternative, the lead agencies would also conduct appropriate environmental review.

The focus of the impacts analysis for the No Action Alternative is on the potential long-term impacts of ongoing flood damage reduction actions and habitat improvements at historical funding levels (excluding recent legislative funding related to the Chehalis Basin Strategy). Under the No Action Alternative, actions to reduce flood damage and improve aquatic species habitat conditions would continue to a lesser extent than with the action alternatives, and in a piecemeal fashion.

Each action alternative includes a distinct combination of Large-scale Flood Damage Reduction Actions (i.e., Flood Retention Facility, Restorative Flood Protection, Airport Levee Improvements, I-5 Projects, and Aberdeen/Hoquiam North Shore Levee). All action alternatives include the same Local-scale Flood Damage Reduction Actions (Floodproofing, Local Projects, Land Use Management, and Flood Warning System Improvements) and Aquatic Species Habitat Actions (low and high scenarios).

Impacts related to changes in flooding extents and depths in this chapter were analyzed using hydrologic modeling. Results are given in the context of the 100-year floodplain of the Chehalis River, referred to as the Chehalis River floodplain and the floodplain affected by the Restorative Flood Protection action element (Alternative 4).

No long-term impacts on air quality or noise are anticipated to occur as a result of the No Action Alternative or any of the action alternatives. Furthermore, visual quality conditions would result in site-specific, rather than Basin-wide, significant impacts with the Flood Retention Facility and Restorative Flood Protection. Therefore, potential impacts on these resources are not further evaluated in Chapter 5.

Table 5.1-1 provides a summary of the action elements evaluated in this EIS, and illustrates how the action elements are combined into the considered alternatives. Under the No Action Alternative, actions to reduce flood damage and improve habitat conditions would continue to a lesser extent than under the action alternatives (open circles designate less intense actions as part of this alternative).

**Table 5.1-1
Action Elements and Combined Alternatives for Evaluation in the Draft EIS**

ACTION ELEMENT	PROPOSED ALTERNATIVES				
	NO ACTION ALTERNATIVE	ALTERNATIVE 1: 2014 GOVERNOR'S WORK GROUP RECOMMENDATION	ALTERNATIVE 2: STRUCTURAL FLOOD PROTECTION WITHOUT FLOOD RETENTION FACILITY	ALTERNATIVE 3: NONSTRUCTURAL FLOOD PROTECTION	ALTERNATIVE 4: RESTORATIVE FLOOD PROTECTION
LARGE-SCALE FLOOD DAMAGE REDUCTION ACTIONS					
Flood Retention Facility (dam and associated reservoir)		●			
Airport Levee Improvements		●	●		
I-5 Projects		●	●		
Aberdeen/Hoquiam North Shore Levee		●	●		
Restorative Flood Protection					●
LOCAL-SCALE FLOOD DAMAGE REDUCTION ACTIONS					
Floodproofing		●	●	●	●
Local Projects	○	●	●	●	●
Land Use Management	○	●	●	●	●
Flood Warning System Improvements	○	●	●	●	●
AQUATIC SPECIES HABITAT ACTIONS					
Restore riparian habitat	○	●	●	●	●
Remove fish passage barriers	○	●	●	●	●
Restore off channel habitat	○	●	●	●	●
Add wood to streams for habitat	○	●	●	●	●
Reduce bank erosion to naturally occurring rates	○	●	●	●	●
Reconnect the floodplain	○	●	●	●	●
Create, restore, enhance wetlands	○	●	●	●	●