



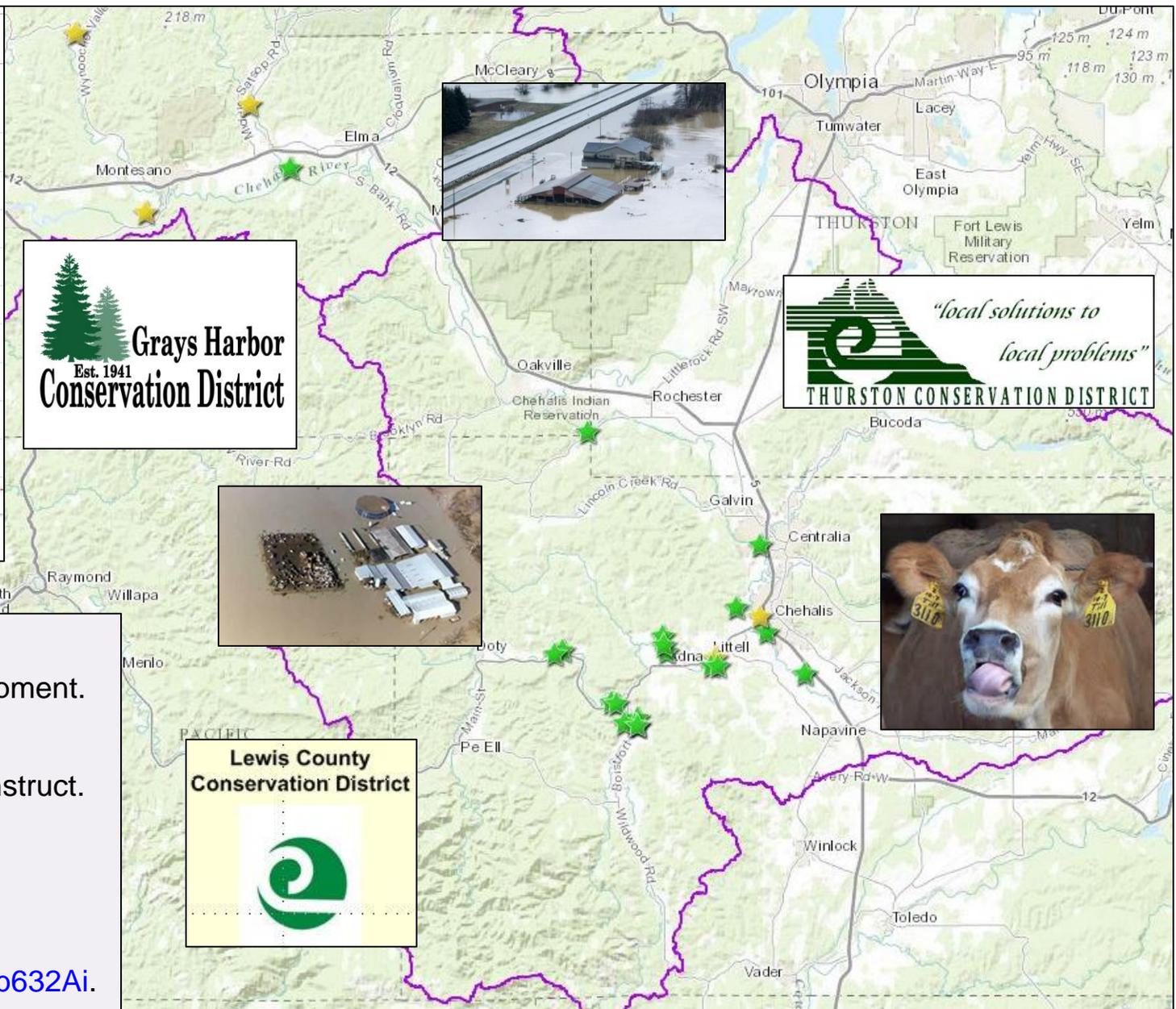
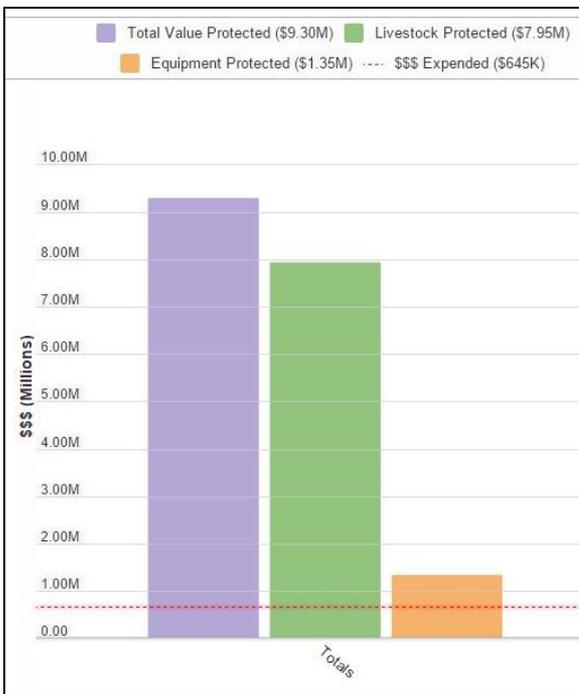
1. ~2-3 years to design, permit, construct.
2. Protect people, property, infrastructure.
3. Improve readiness, response, resiliency.
4. Examples:
 - ✓ Drinking Water (Boistfort, Bucoda).
 - ✓ Wastewater (Montesano, Pe Ell).
 - ✓ Emergency Response (Grays Harbor County, Chehalis-Centralia Airport).
 - ✓ Regional Economic Infrastructure (Montesano).
 - ✓ Community Protection (Adna, Bucoda, Chehalis Tribe, Oakville).
 - ✓ Flood Warning Infrastructure (Basin-wide).
5. Average cost = \$250K to \$2M.

www.ezview.wa.gov/chehalisbasinlocalfloodreliefprojects

- → Complete
- → Underway

Local Projects (2012-17)
www.ezview.wa.gov/chehalisfloodauthority





1. Save lives, livelihoods.
2. Protects people, animals, equipment.
3. 25 locations throughout Basin.
4. <2 years to design, permit, construct.
5. 14:1 return-on-investment.
6. Benefit whole basin.
7. Reusable.
8. Testimonials → <http://arcg.is/2b632Ai>.

★ → Complete
 ☆ → Underway

Farm Pads, Evacuation Routes (2012-17)



www.ezview.wa.gov/chehalisfloodauthority



1. Foundation vents (right) will not protect against floods; foundation flood openings (below) will.

2. Bucoda pilot installed proper foundation flood openings in 11 homes, and provided new Elevation Certificates to homeowners to lower flood insurance payments.



ELEVATION CERTIFICATE

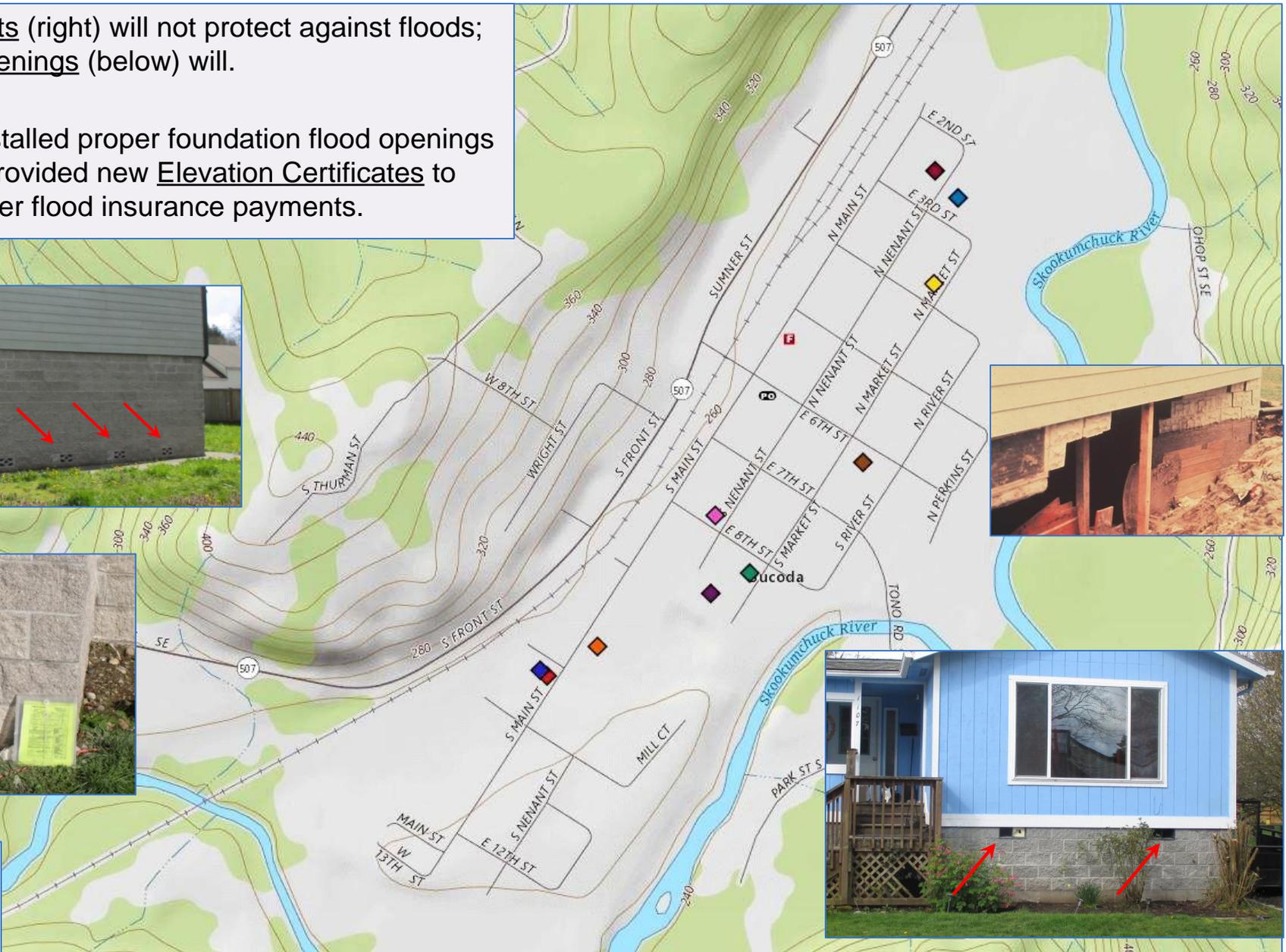
SECTION A - PROPERTY IDENTIFICATION

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

SECTION C - BUILDING ELEVATION INFORMATION (SUSCEPTIBLE REQUIREMENTS)

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

(Note: This is a detailed form with multiple sections for property identification, flood map information, building elevation data, and professional certification.)



2015-16 Local Floodproofing Pilot "Bucoda Foundation Flood Opening Retrofits"

www.ezview.wa.gov/bucodafloodrelief



Home www.chehalisriverflood.com

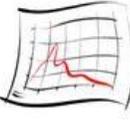
Chehalis River Basin Flood Authority



Weather Forecast



Rainfall Forecast



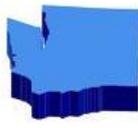
River Forecast



Flood Maps



Gage Data Graphs



Gage Data Maps



Flood Authority News



Road Conditions

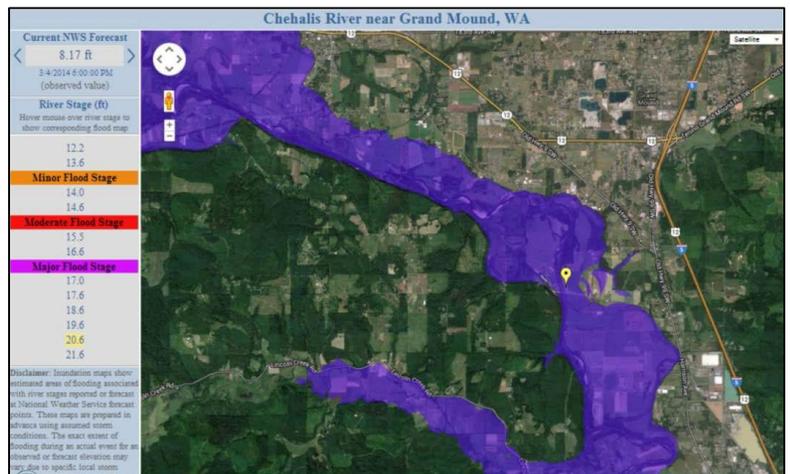
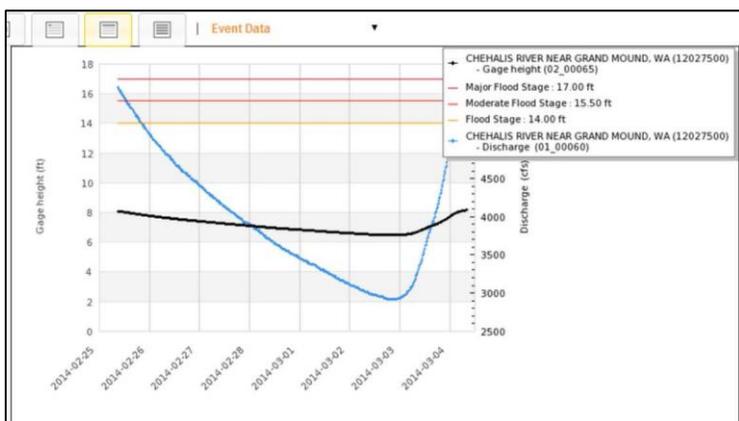
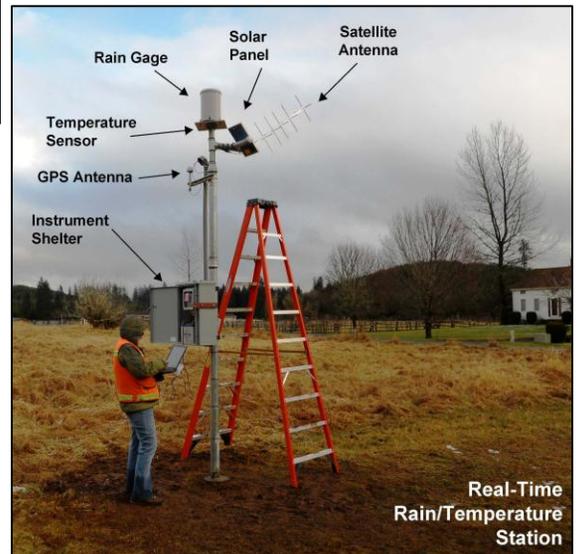
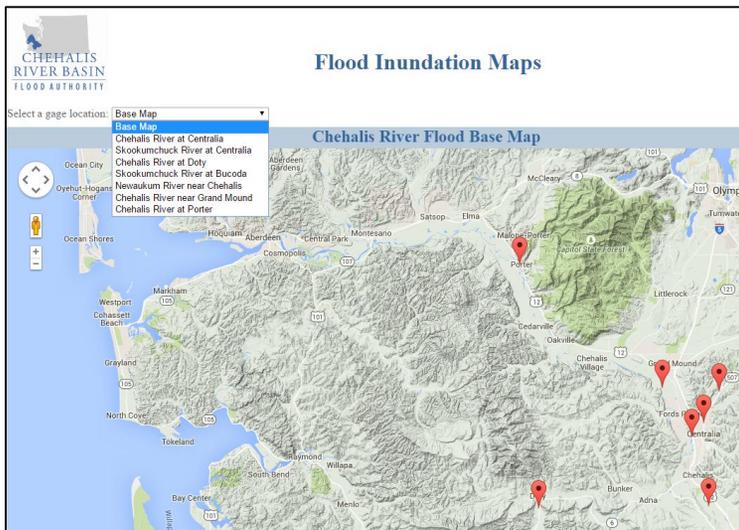
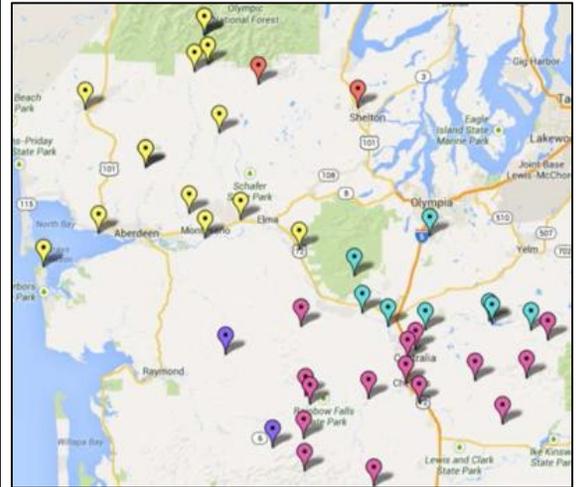


USGS Gages



Help

National Weather Service
www.wrth.noaa.gov/new/
 National Weather Service Forecast Office
 Seattle, WA




Chehalis River Basin - Flood Warning System
www.chehalisriverflood.com

Chehalis Basin Flood Warning & Alert System

www.chehalisriverflood.com



CHEHALIS RIVER BASIN FLOOD AUTHORITY

Strategy Purpose and Need

History of flooding and habitat degradation in the Chehalis Basin

The Chehalis Basin has experienced major flooding and degradation of aquatic species habitat for decades. With no action, the future for flood damage and aquatic species will be significantly worse.

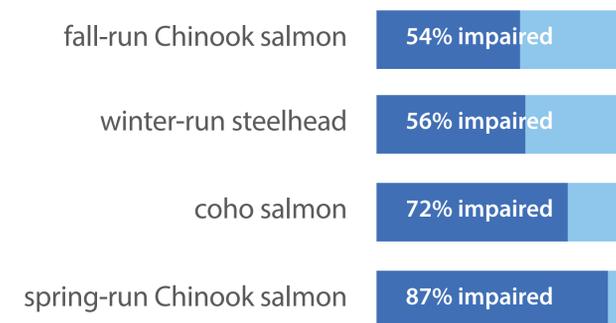
What's needed?

The Chehalis Basin Strategy needs to provide a long-term, integrated approach to substantially reduce damage from major floods and restore degraded habitat for aquatic species in the Chehalis Basin.

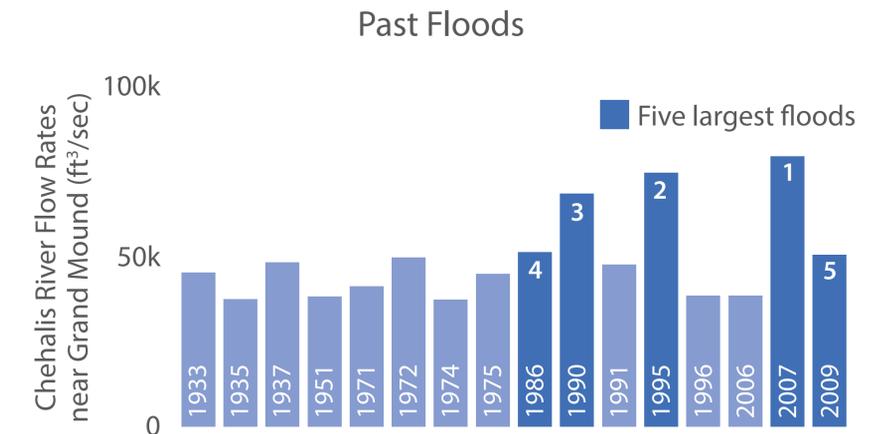
The strategy should provide:

- A safer future for people
- A healthier, more resilient Chehalis Basin for aquatic species
- Reduced social and economic costs associated with floods and degraded habitat for aquatic species

Estimate of Current Habitat Impairment



Caitlin McIntyre, Lacey, Washington



December 1933, The Chronicle, Centralia, Washington



December 2007, The Chronicle, Centralia, Washington

Actions and Alternatives

For the EIS, different combinations of actions were made into different alternatives

Actions being considered

Flood Damage Reduction		Aquatic Species Habitat Actions
Large-scale <ul style="list-style-type: none"> Flood Retention Facility (Dam and Associated Reservoir) Airport Levee Improvements I-5 Projects Aberdeen/Hoquiam North Shore Levee Restorative Flood Protection 	Local-scale <ul style="list-style-type: none"> Floodproofing Local Projects (Small Flood Reduction) Land Use Management Flood Warning System Improvements 	<ul style="list-style-type: none"> Restore Riparian Habitat Remove Fish Passage Barriers Restore Off-channel Habitat Add Wood to Streams for Habitat Restore Bank Erosion to Naturally Occurring Rates Reconnect the Floodplain Create, Restore, and Enhance Wetlands

The No Action alternative includes:

- Ongoing flood damage reduction and aquatic habitat restoration projects at historical funding levels.
- Projects completed in a piecemeal fashion, with associated impacts and mitigation measures identified on a site-specific, project-level basis.

Alternatives studied in the draft EIS

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
	Flood Retention Facility (Dam and Associated Reservoir)			Restorative Flood Protection
	Airport Levee Improvements			
		I-5 Projects		
	Aberdeen/Hoquiam North Shore Levee			
	Local-scale Flood Damage Reduction Actions			
	<i>High Scenario</i> Aquatic Species Habitat Actions <i>Low Scenario</i>			

? Want to learn more?

- Pages 8 to 13 in the draft EIS Executive Summary
- Chapter 2.3 in the draft EIS

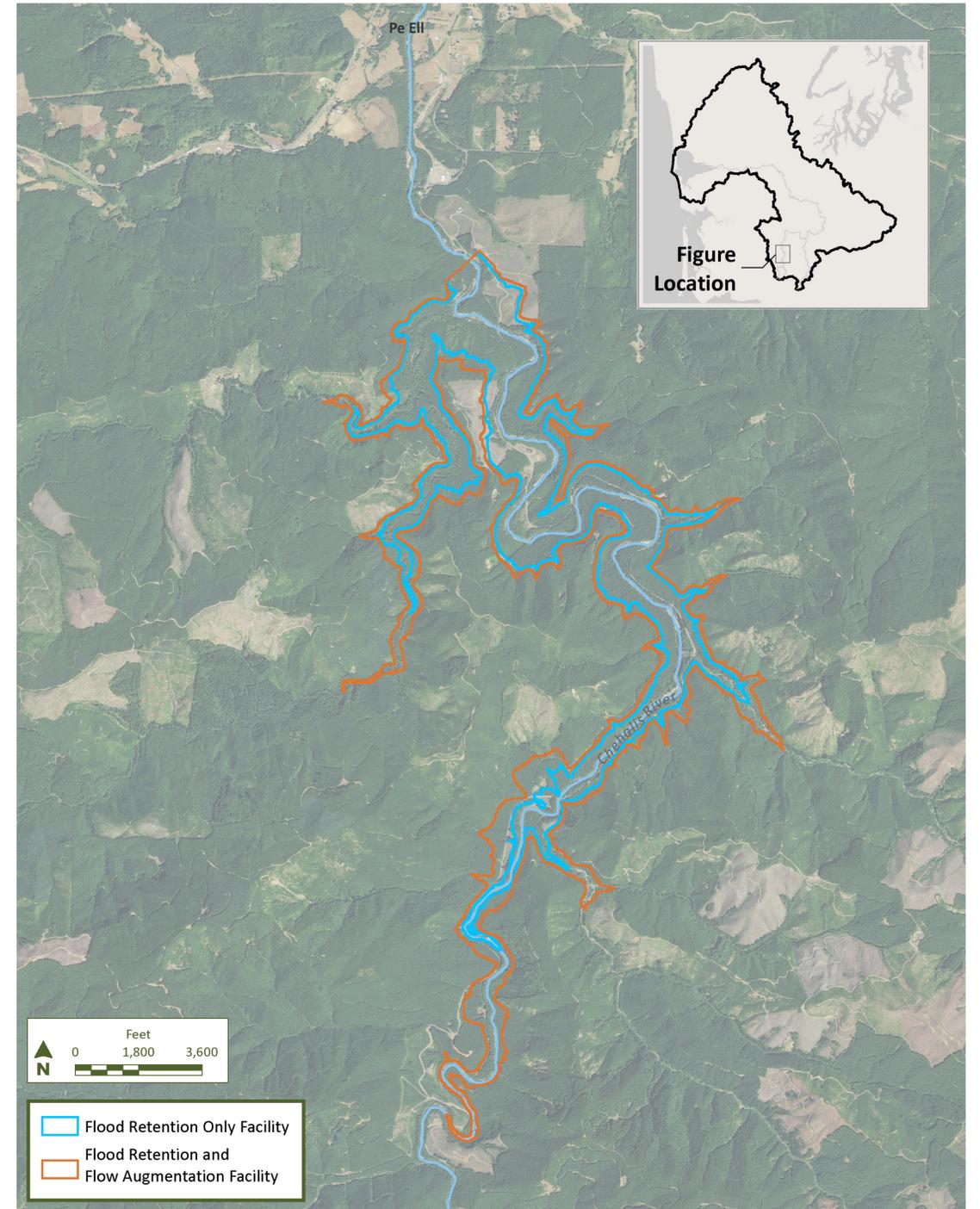
Flood Retention Facility (Dam)



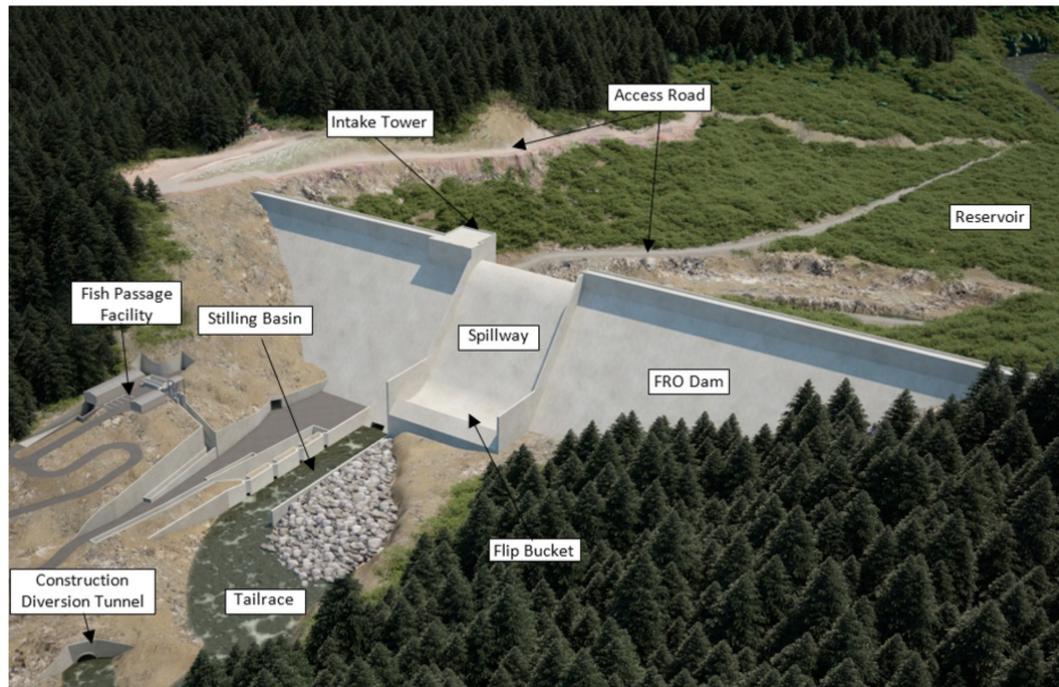
**Rendering of
Flood Retention
Only Facility**
(100-year Flood Stage)



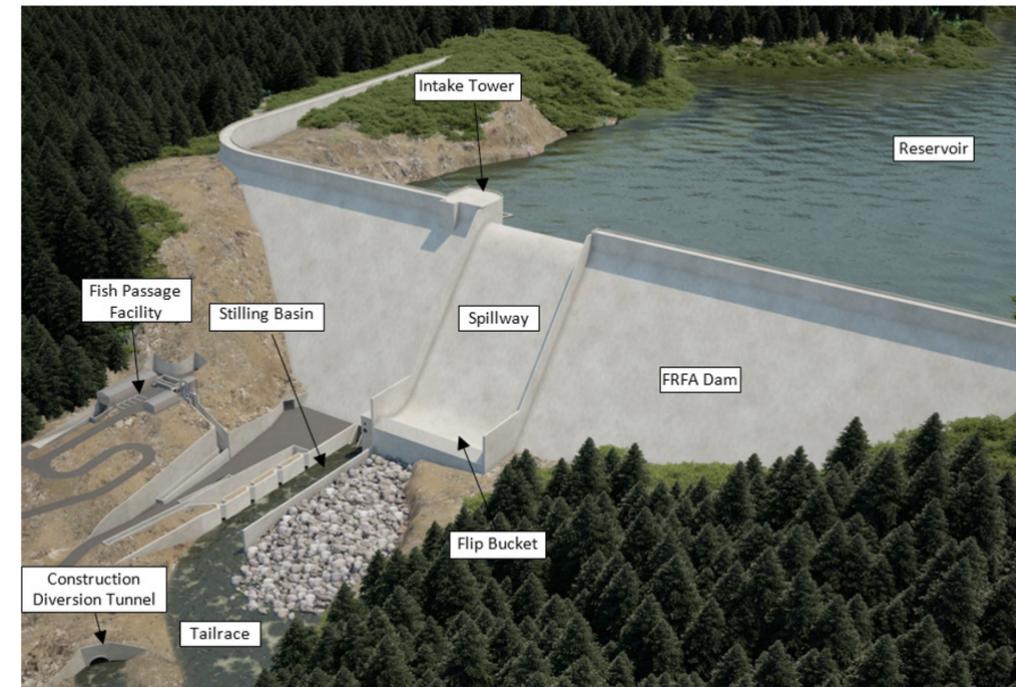
**Rendering of
Flood Retention
and Flow
Augmentation
Facility**
(100-year Flood Stage)



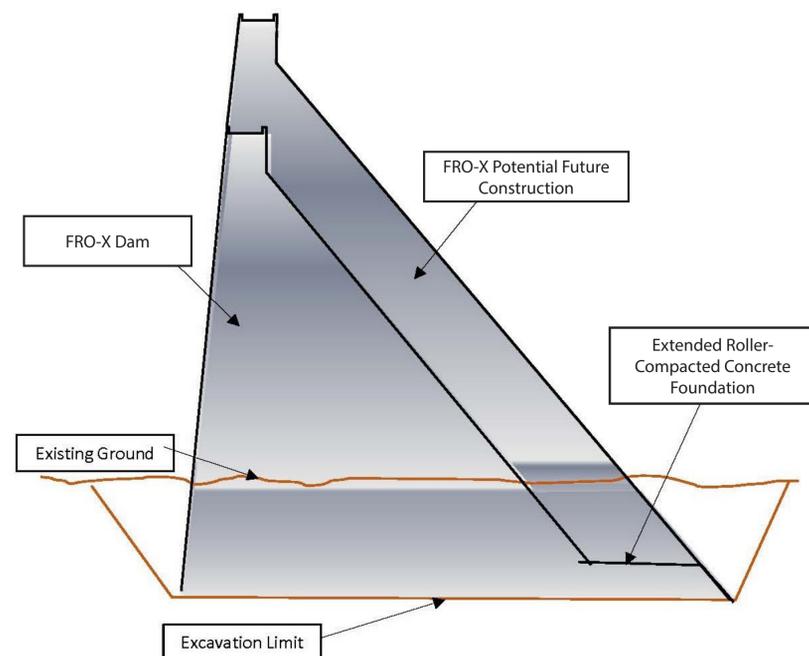
Flood Retention Facility (Dam)



Flood Retention Only (FRO)



Flood Retention and Flow Augmentation (FRFA)



Flood Retention Only - Expandable (FRO-X)

Item	FRO	FRFA	FRO-X (Initial Construction)
Dam structural height (feet)	254	313	254
Reservoir storage volume (acre-feet)	65,000	130,000	65,000
Recommended upstream fish passage	Open tunnels and CHTR facility	CHTR facility or fish ladder	Open tunnels and CHTR facility
Recommended downstream fish passage	Open tunnels	Floating surface collector or fixed multi-port collector	Open tunnels
Total project cost (middle cost)	\$341 million	\$544 million	\$401 million

Note:
CHTR: controlled handling, transport, and release

Aquatic Species Restoration Plan

Vision

The vision of the Aquatic Species Restoration Plan is to provide for a future where the Chehalis Basin can support healthy and harvestable salmon populations, robust and diverse populations of native aquatic and semi-aquatic species, and productive, self-sustaining ecosystems that are resilient to climate change and anthropogenic stressors, while also honoring the social, economic, and cultural values of the region.

Objectives

Salmon and Steelhead

- Coho
- Fall-run Chinook
- Spring-run Chinook
- Steelhead
- Chum

Strategies

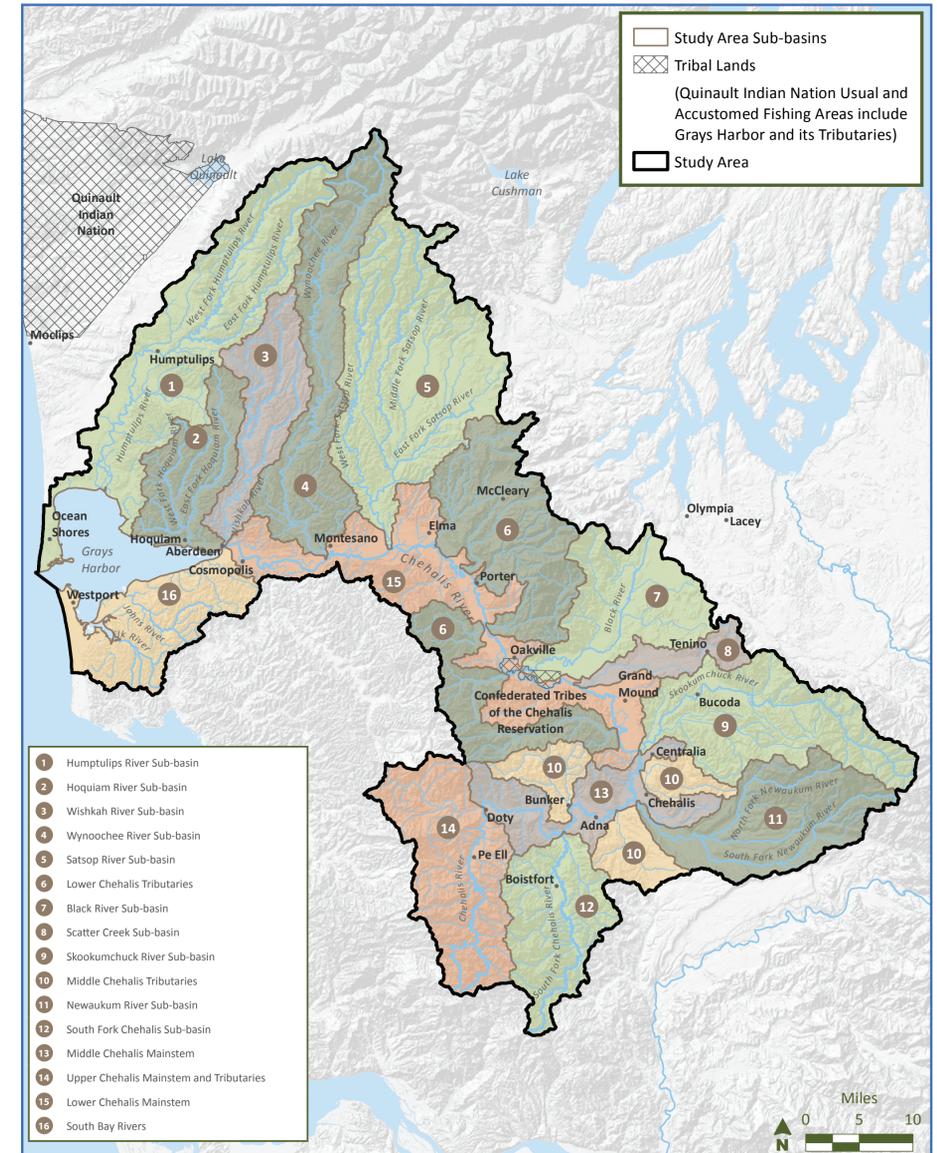
1. Protect intact ecosystems, unique habitats, and strategic areas that support critical ecosystem functions and priority species
2. Restore ecosystem functions to healthy and self-sustaining levels for the benefit of native aquatic and semi-aquatic species
3. Effectively plan for current and future conditions in the Chehalis Basin
4. Build institutional capacity for restoration, protection, and planning processes
5. Engage landowners and the community to ensure a successful plan and support implementation of actions

Other Native Aquatic Species

- Western toad
- Oregon spotted frog
- Pacific lamprey
- Other native fishes
- Other native aquatic and semi-aquatic species

Basin-wide

- Habitat
- Community involvement
- Socioeconomic



Chehalis Basin Study Area Sub-basins