State Draft Environmental Impact Statement (EIS)

for the Proposed Chehalis River Basin Flood Damage Reduction Project

Presentation

Overview of the Presentation

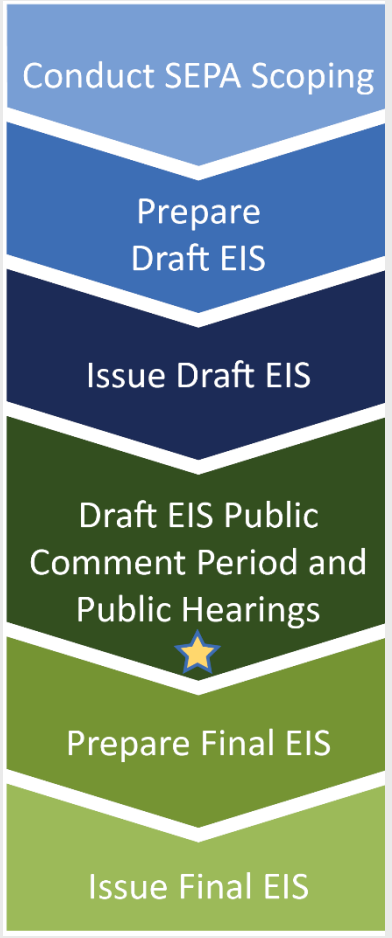
- Purpose of an Environmental Impact Statement (EIS)
- Applicant's Proposed Project
- Findings of Probable Significant Adverse Impacts
- Proposed Mitigation

Purpose of an EIS

To provide information:

- At an early stage of a project
- To identify likely significant adverse impacts
- For the public and decision-makers to consider

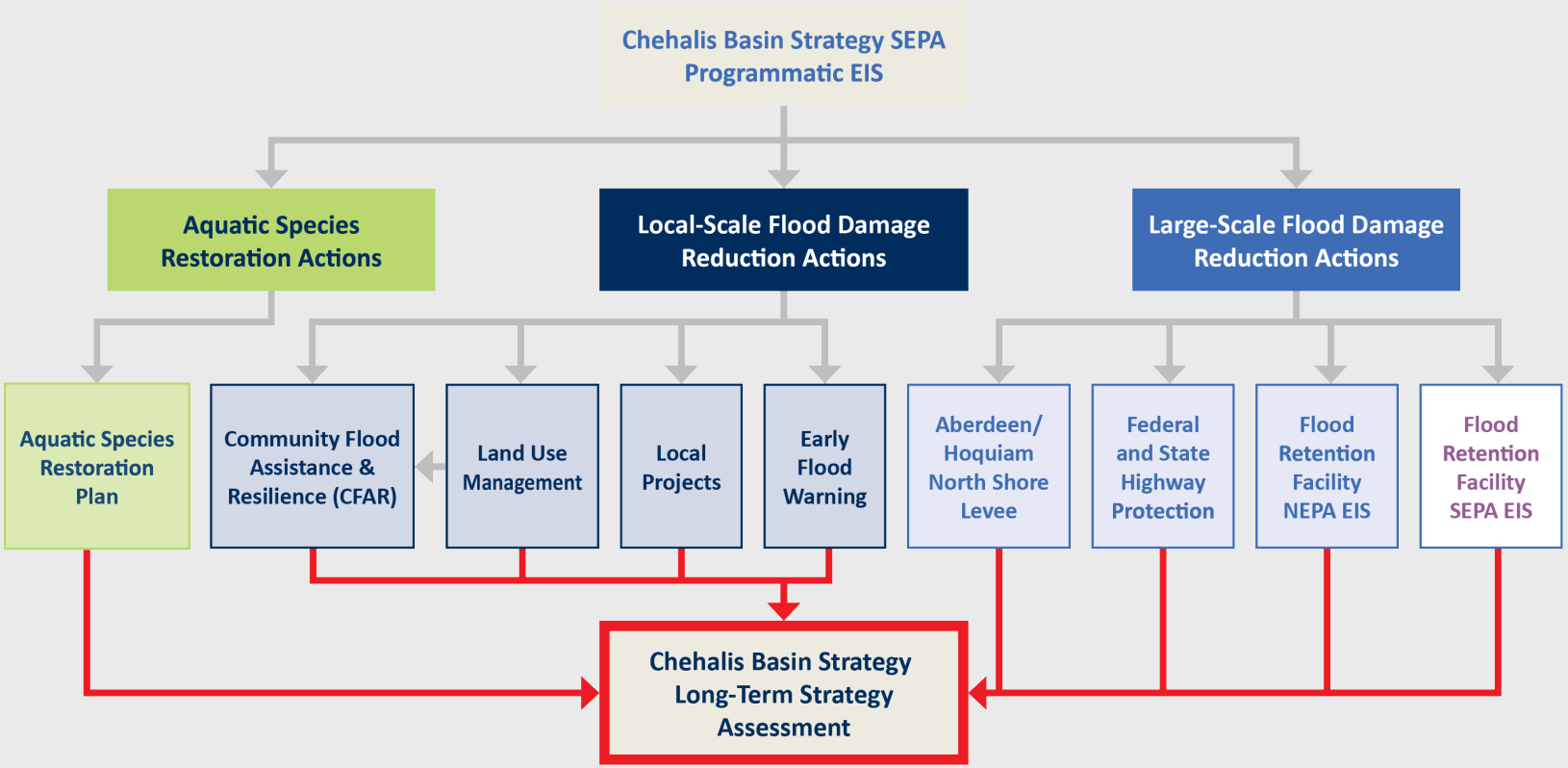
An EIS does not approve or deny a proposed project.



The EIS

- Provides a science-based, neutral evaluation of impacts which are:
  - Probable
  - Adverse
  - Environmental
- Evaluates reasonable alternatives
- Proposes mitigation measures that would avoid or minimize impacts

Relationship to Chehalis Basin Strategy



Proposed Project:

Chehalis River Basin Flood Damage Reduction Project

Applicant: Chehalis River Basin Flood Control Zone District

Chehalis River Basin Flood Control Zone District Proposed Project

To construct a new flood retention facility and temporary reservoir near the town of Pe Ell, Washington, and make levee changes at the Chehalis-Centralia Airport.

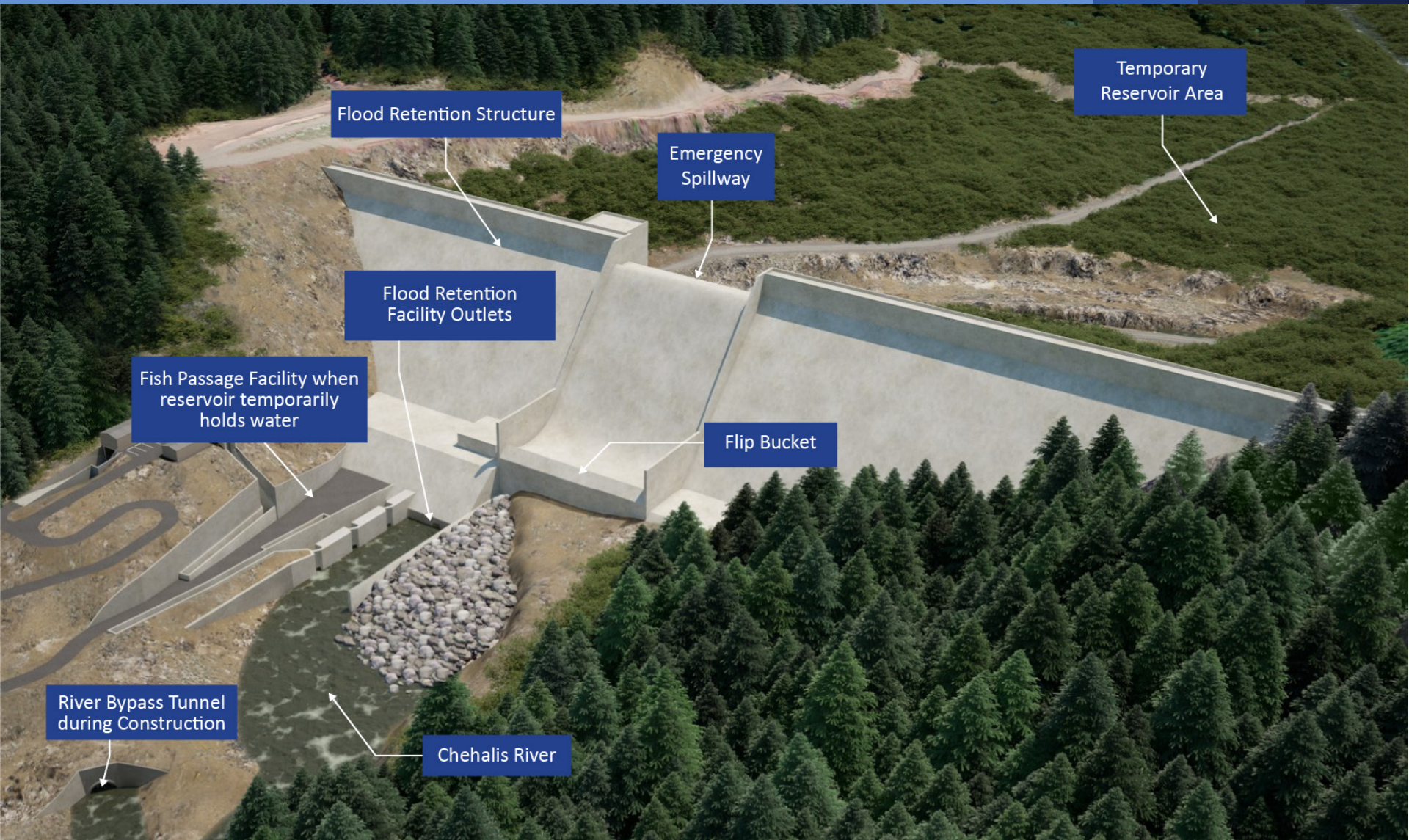
Applicant's Purpose

To reduce flood damage from major floods or larger in the Chehalis-Centralia area by constructing a flood retention facility and temporary reservoir and make changes to the Chehalis-Centralia Airport levee to reduce flood damage from catastrophic floods.

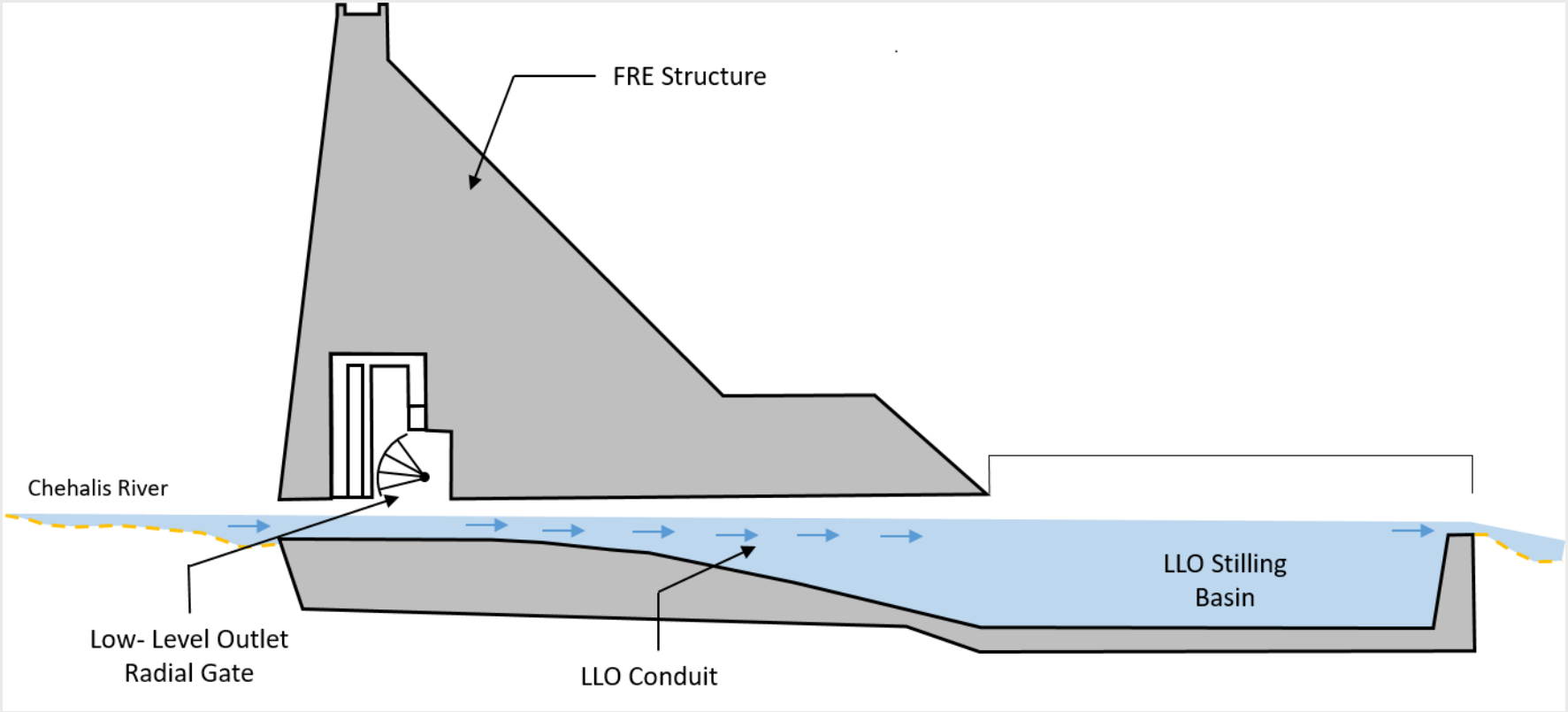
Applicant's Objective

To reduce flooding coming from the Willapa Hills and improve the levee protection level at the Chehalis-Centralia Airport.

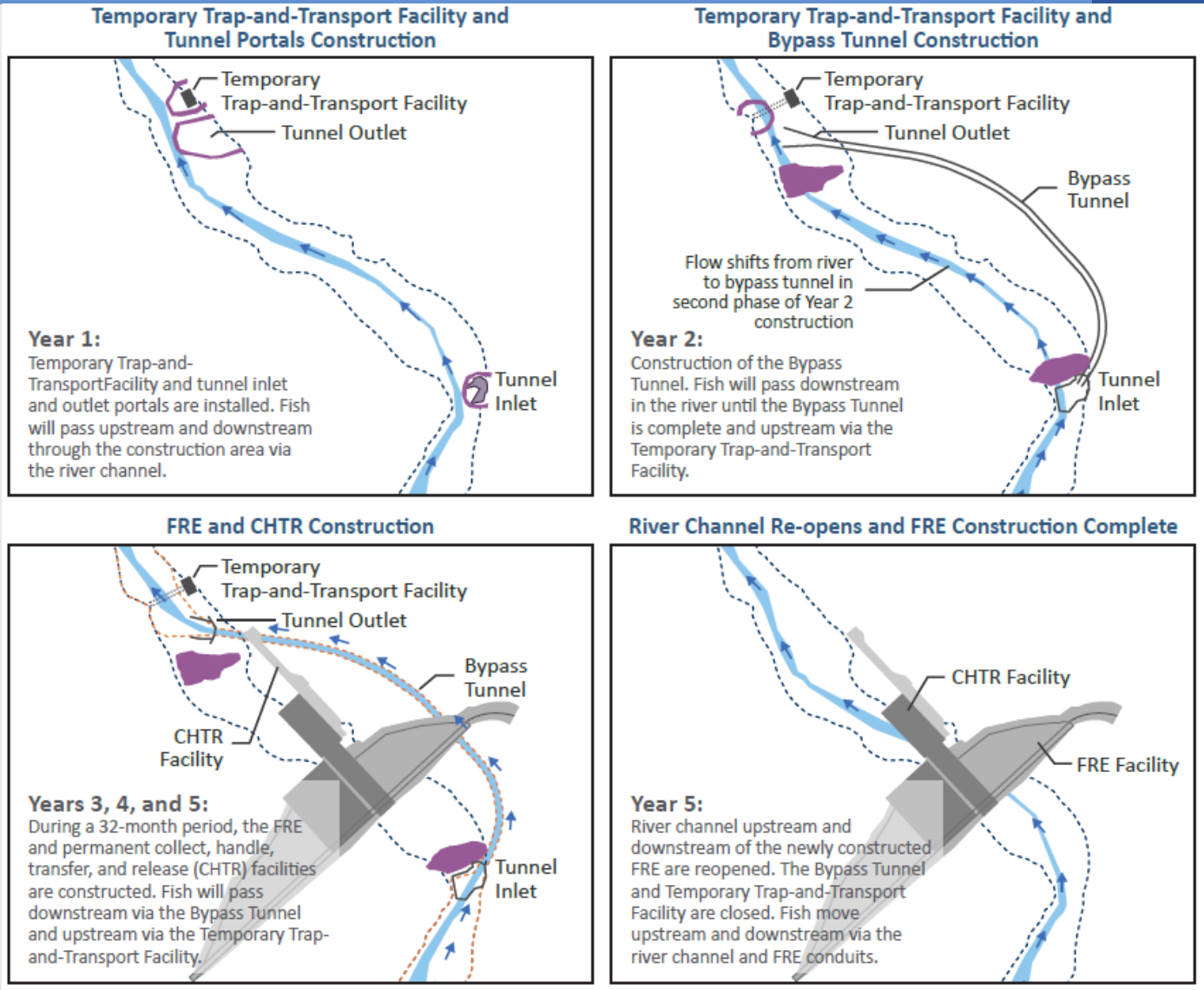
Flood Retention Facility



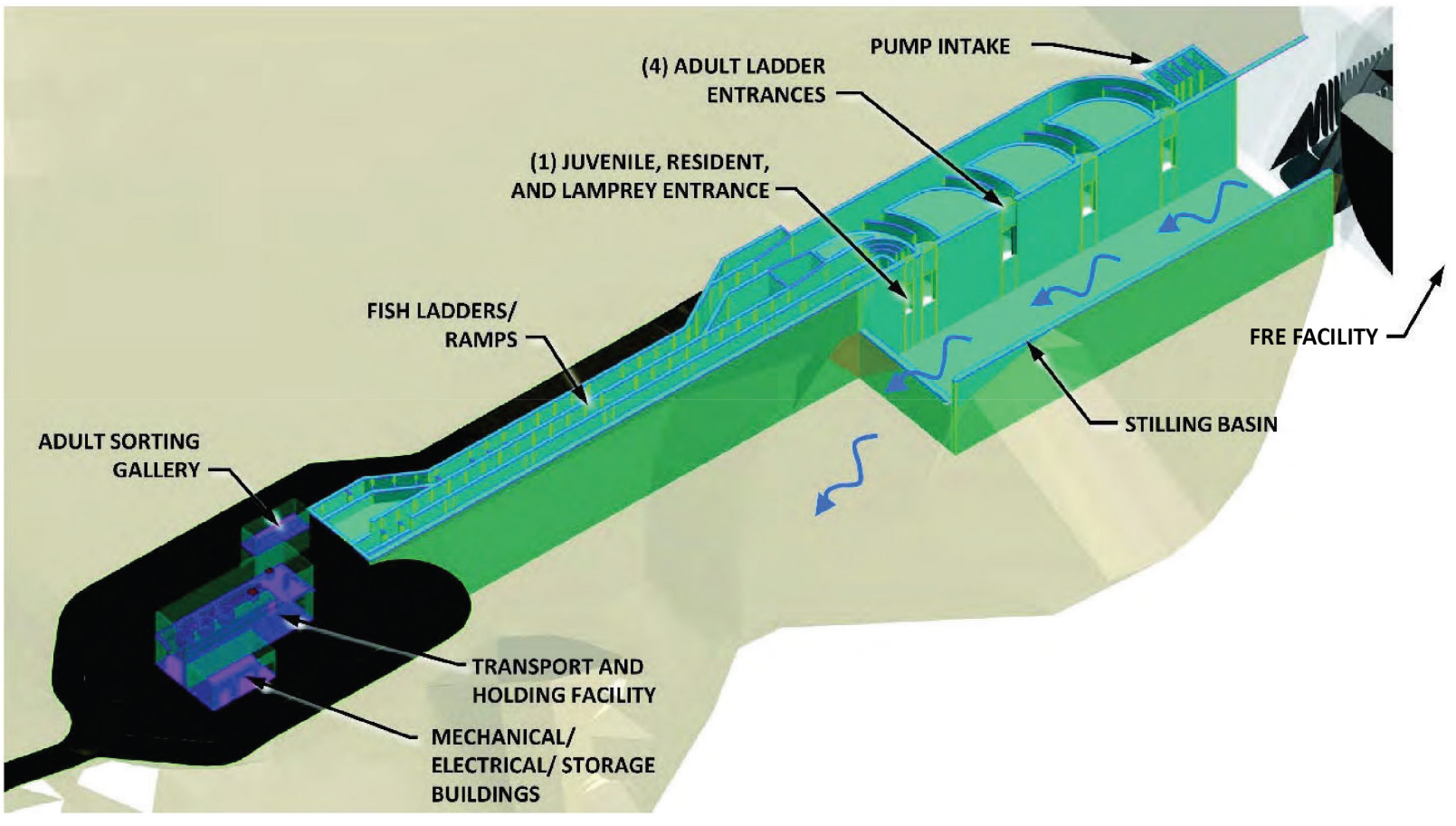
Flood Retention Facility Water Flow in Non-Flood Conditions



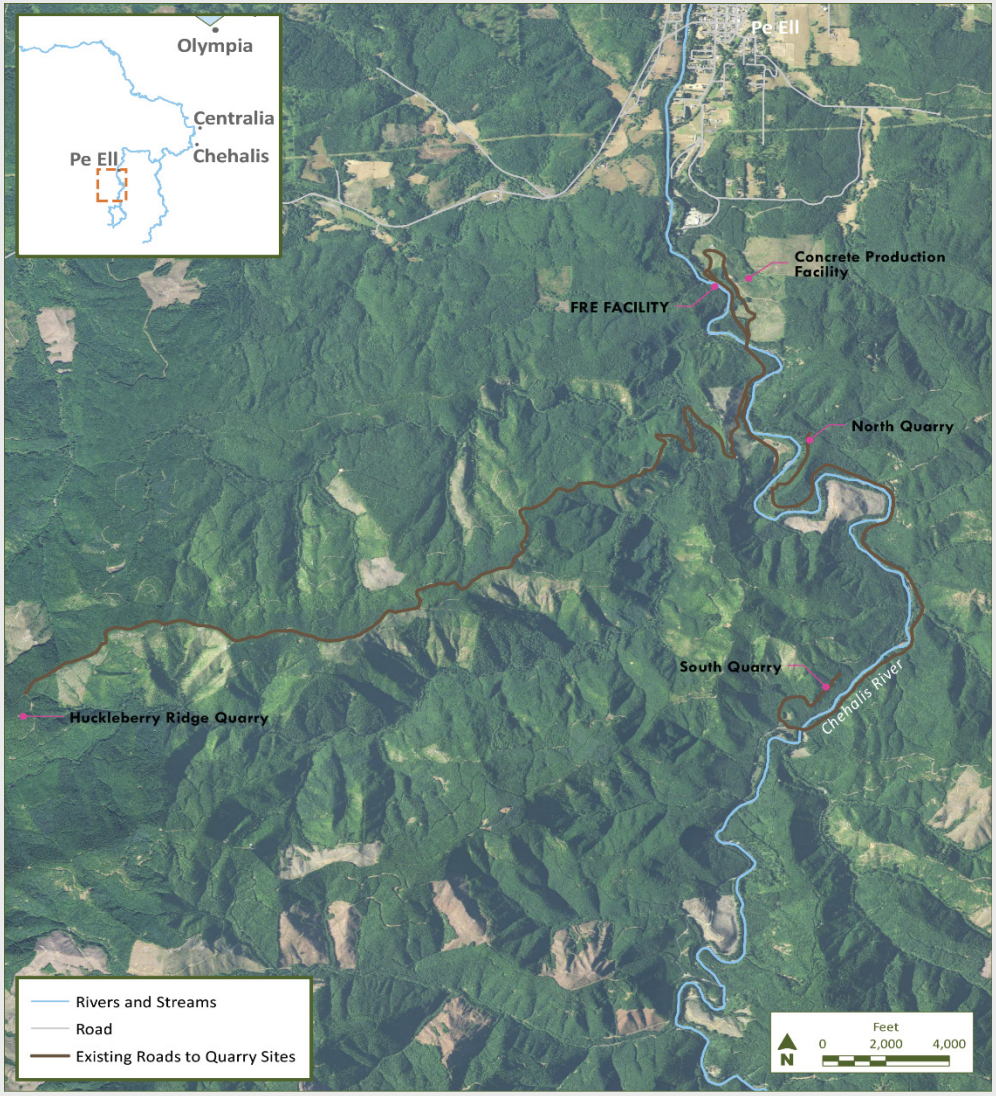
Flood Retention Facility Construction



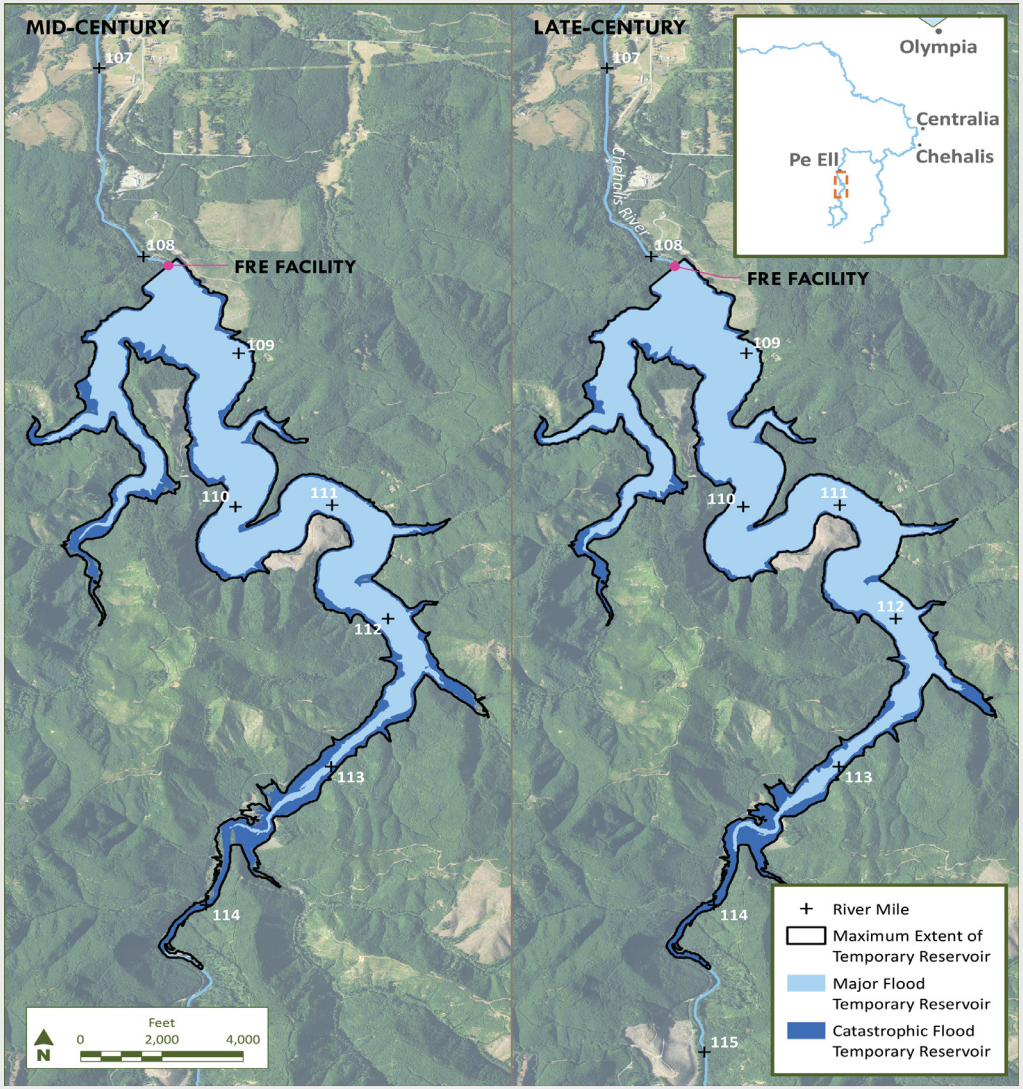
Flood Retention Facility Operations Fish Trap and Transport



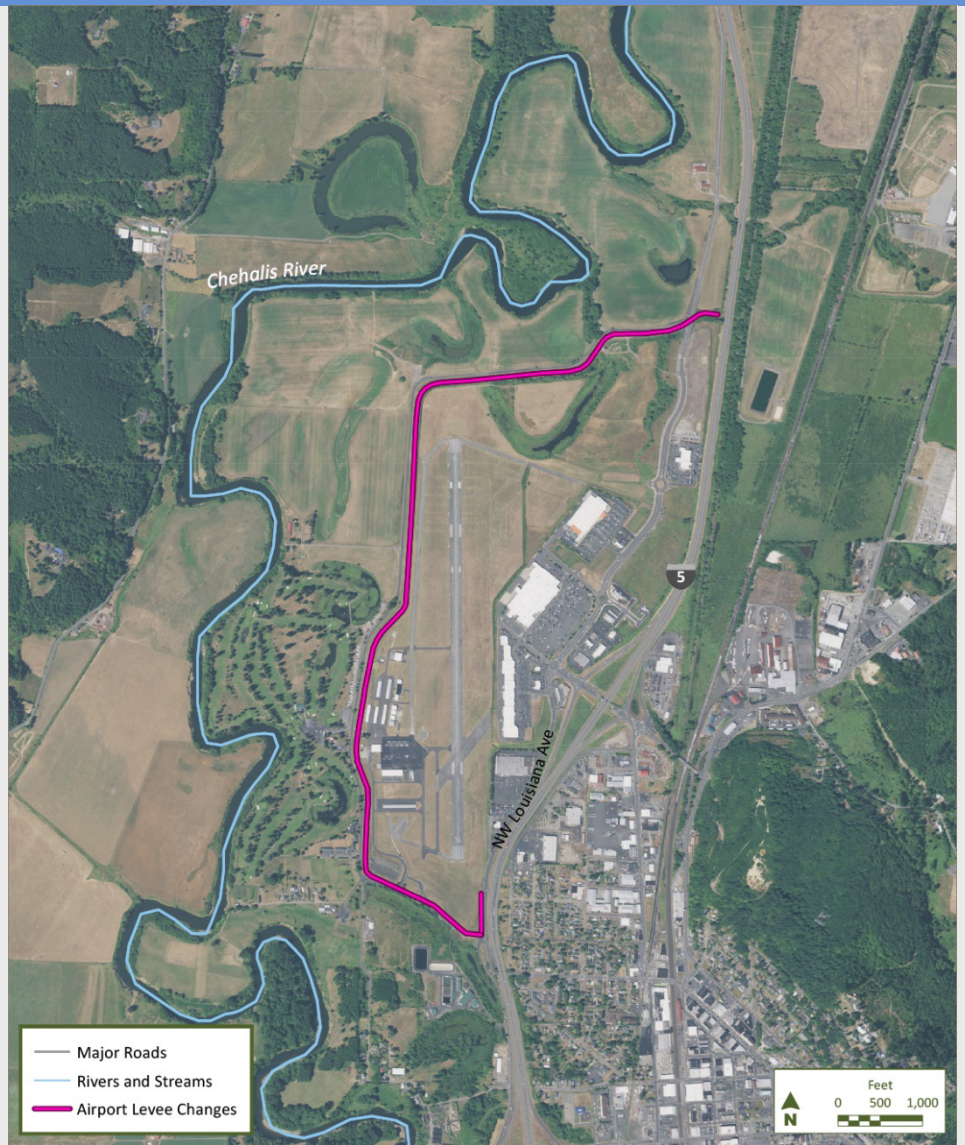
Concrete Production Facility and Quarries



Temporary Reservoir Inundation Area



Airport Levee Improvements



Draft Environmental Impact Statement

Analysis

State Environmental Policy Act (SEPA)

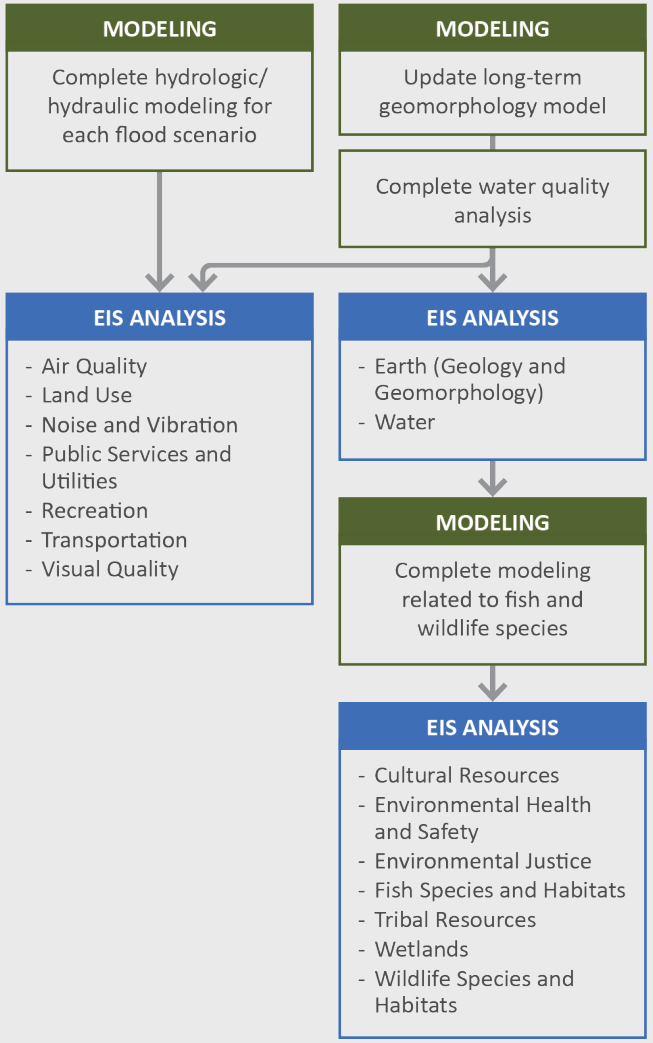
Resources Evaluated

- Air Quality and Greenhouse Gases
- Cultural Resources
- Environmental Health and Safety
- Environmental Justice
- Fish Species and Habitats
- Earth
- Land Use
- Noise and Vibration
- Public Services and Utilities
- Recreation
- Transportation
- Tribal Resources
- Visual Quality
- Water
- Wetlands
- Wildlife Species and Habitats

EIS Analysis Approach

- Models were used for:
  - Water
  - Earth
  - Fish

- Timeframes analyzed:
  - Construction: 2025-2030
  - Operation: 2030-2080



Climate Change

- The EIS incorporates climate change projections throughout the analyses and modeling.
- Includes climate change forecasts for:
  - Mid century
  - Late century
- Climate change is included in the baseline condition for the Proposed Project and Alternatives.
- Climate change projections include:
  - Water and air temperatures
  - Flood peak flows
  - Precipitation and Streamflow
  - Sea level rise

Scenarios Analyzed

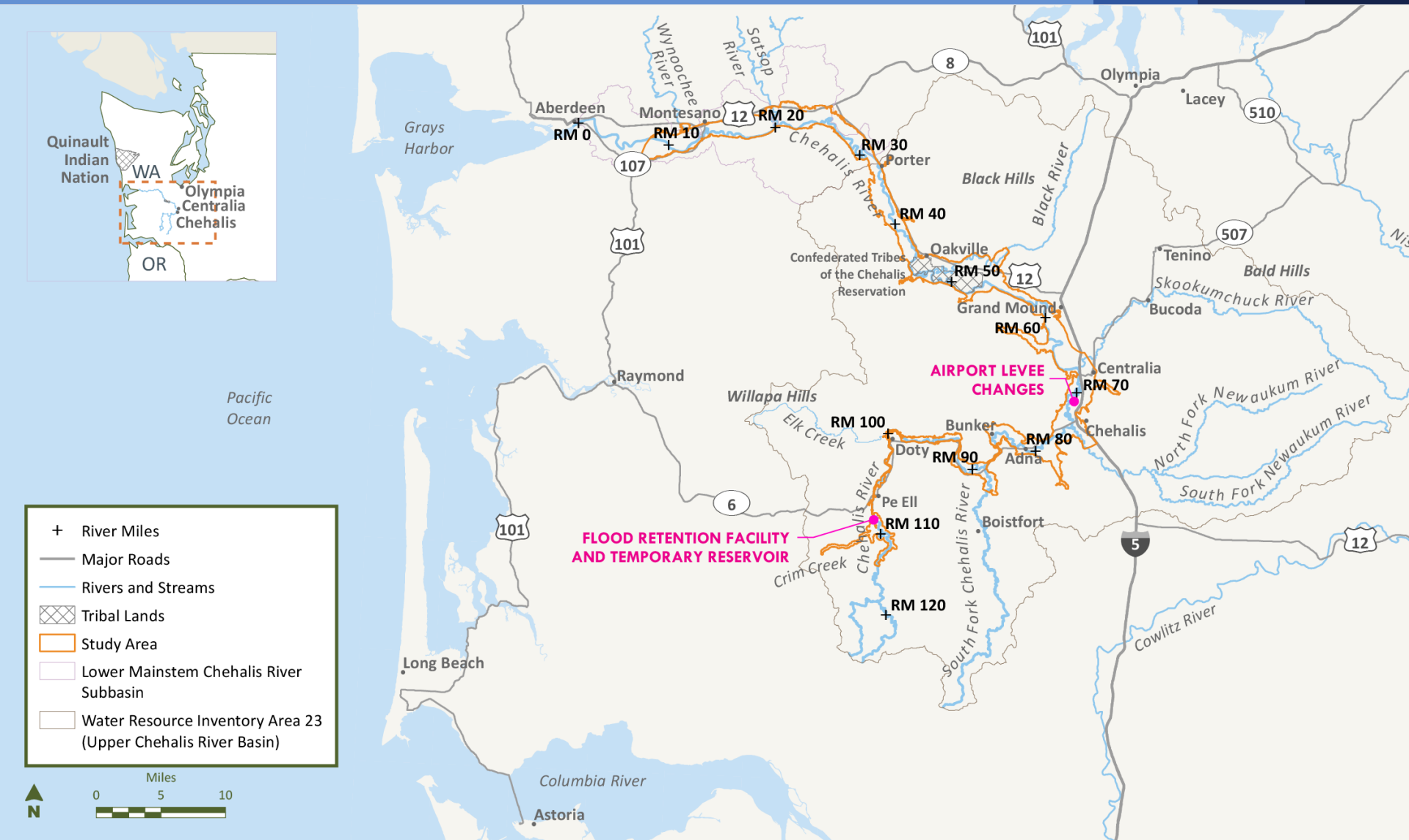
3 scenarios are analyzed in the EIS

- Major flood
  - For flood level when the Applicant would close the gates to the flood retention structure
- Catastrophic flood
  - For flood level the Applicant's project was designed to contain
- Recurring flood
  - If a major flood happens in three consecutive years

EIS Flood Level Terminology
(from Draft EIS, Exhibit 3-1)

QUALITATIVE TERM USED IN THE EIS	CHANCE OF OCCURRENCE IN 1 YEAR	ASSOCIATED FLOOD-YEAR TERM	FLOW (CUBIC FEET PER SECOND)	SIMILAR SIZED CHEHALIS BASIN FLOODS
Major flood	Current: 14% Mid-century: 20% Late-century: 25%	Current: 7-year Mid-century: 5-year Late-century: 4-year	38,800 at Grand Mound gage	2009 flood
Catastrophic flood	Current: 1% Mid-century: 2% Late-century: 4%	Current: 100-year Mid-century: 44-year Late-century: 27-year	75,100 at Grand Mound gage	1996 flood

Vicinity Map and Study Area



Alternatives Evaluated

1. No Action Alternative
   - Future if proposed project is not built
   - Climate change is part of the baseline for the alternative
2. Local Actions Alternative
   - Local scale approaches which could achieve the Applicant's objective
   - Does not include Proposed Project
   - Climate change is part of the baseline for the alternative
   - Examples: land use management actions, buying out or relocating properties or structures, improving emergency response, improving floodplain function

Environmental Impact Statement

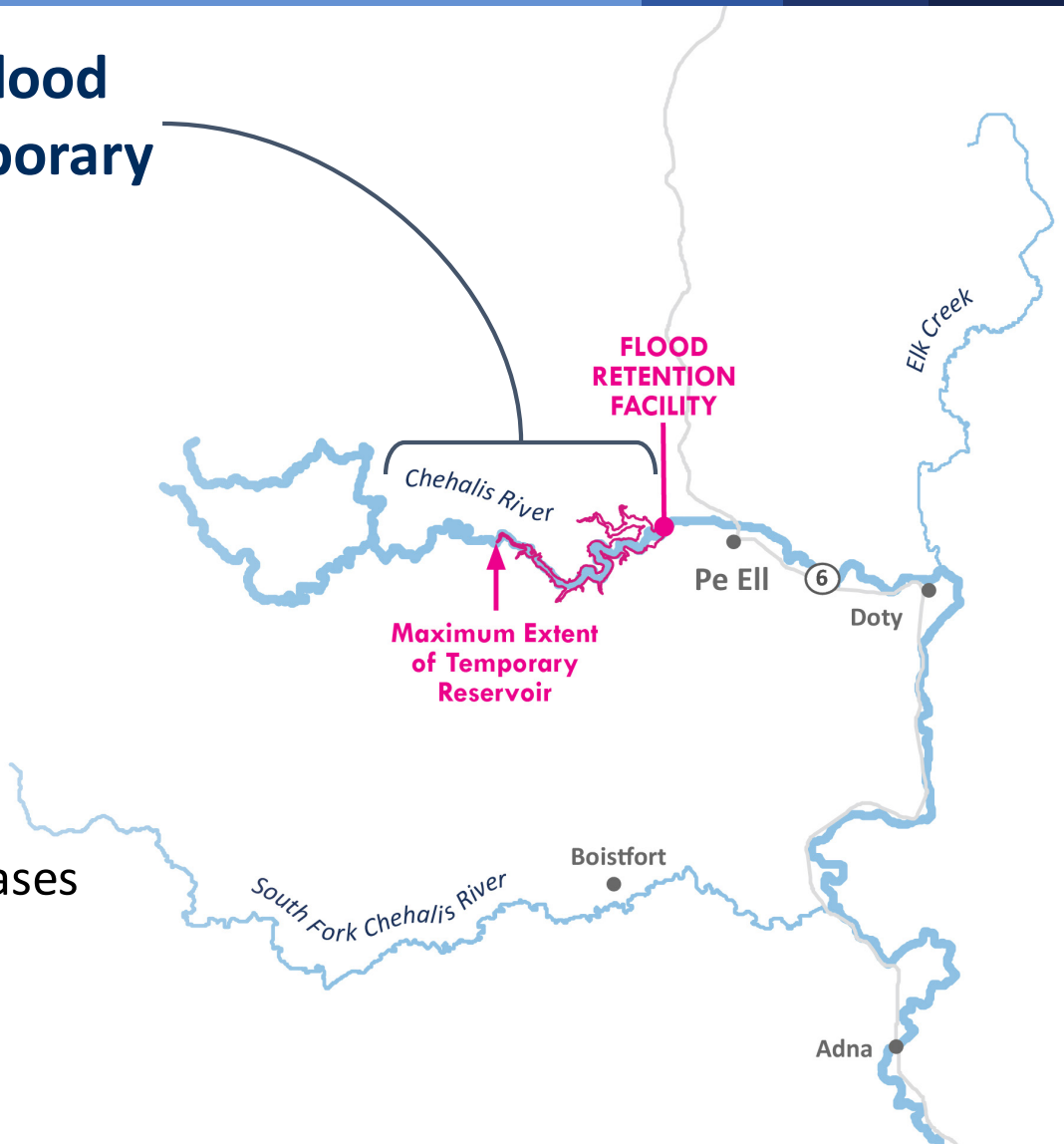
Probable Significant Adverse Environmental Impacts from the Proposed Project

State Environmental Policy Act (SEPA)

Probable Significant Adverse Impacts

Significant Impacts in the Flood Retention Facility and Temporary Reservoir Area:

- Fish and Aquatic Species
- Fish Habitat
- Wildlife Species
- Wildlife Habitat
- Water Quality
- Wetlands and Streams
- Recreation
- Land Use
- Air Quality and Greenhouse Gases



Significant Adverse Impacts (Flood Retention Structure and Temporary Reservoir Area)

WATER

Chehalis River water quality would be significantly affected from the removal of trees and repeated inundation of the reservoir area.

- Temperature increases of up to 5.4°F in the Chehalis River and up to 9°F in Crim Creek
- Decreased dissolved oxygen

WETLANDS AND STREAMS

Construction of the flood retention facility and roads, removal of large trees, and inundation in the reservoir area would permanently eliminate:

- 11 acres of wetlands and 333 acres of wetland buffers
- 17 miles of streams and 441 acres of stream buffers
- 0.3 acre of the Chehalis River

Significant Adverse Impacts (Flood Retention Structure and Temporary Reservoir Area)

FISH AND WILDLIFE HABITAT

Construction and operation of the flood retention facility would significantly degrade habitat.

- Water temperatures would increase and habitat would be removed to build the flood retention structure
- 90% of the trees in the 600-acre temporary reservoir area would be removed during construction
- 847 acres would be temporarily flooded when the reservoir holds water, killing trees and vegetation

Significant Adverse Impacts (Flood Retention Structure and Temporary Reservoir Area)

FISH AND AQUATIC SPECIES

- Construction and operation of the flood retention facility would degrade habitat, increase water temperatures, eliminate spawning areas, and reduce fish passage survivability.
- This would have significant impacts on:
  - Spring-run and fall-run Chinook salmon, coho salmon and steelhead
  - Other native fish like lamprey and whitefish
  - Freshwater mussels.

WILDLIFE SPECIES

- Habitat for wildlife would be degraded. This, along with noise and reduced nesting and breeding areas, would significantly affect wildlife like amphibians and marbled murrelets.

Significant Adverse Impacts (Flood Retention Structure and Temporary Reservoir Area)

RECREATION

Permanent loss of access to:

- 14 miles of kayaking
- 13 miles of recreational riverbank fishing

LAND USE

- Land use changes would be inconsistent with current land use and zoning designations.

AIR QUALITY AND GREENHOUSE GASES

- Construction and operation would cause over 123,000 metric tons of greenhouse gas emissions.

Probable Significant Adverse Impacts

From the Flood Retention Facility to the South Fork Chehalis River

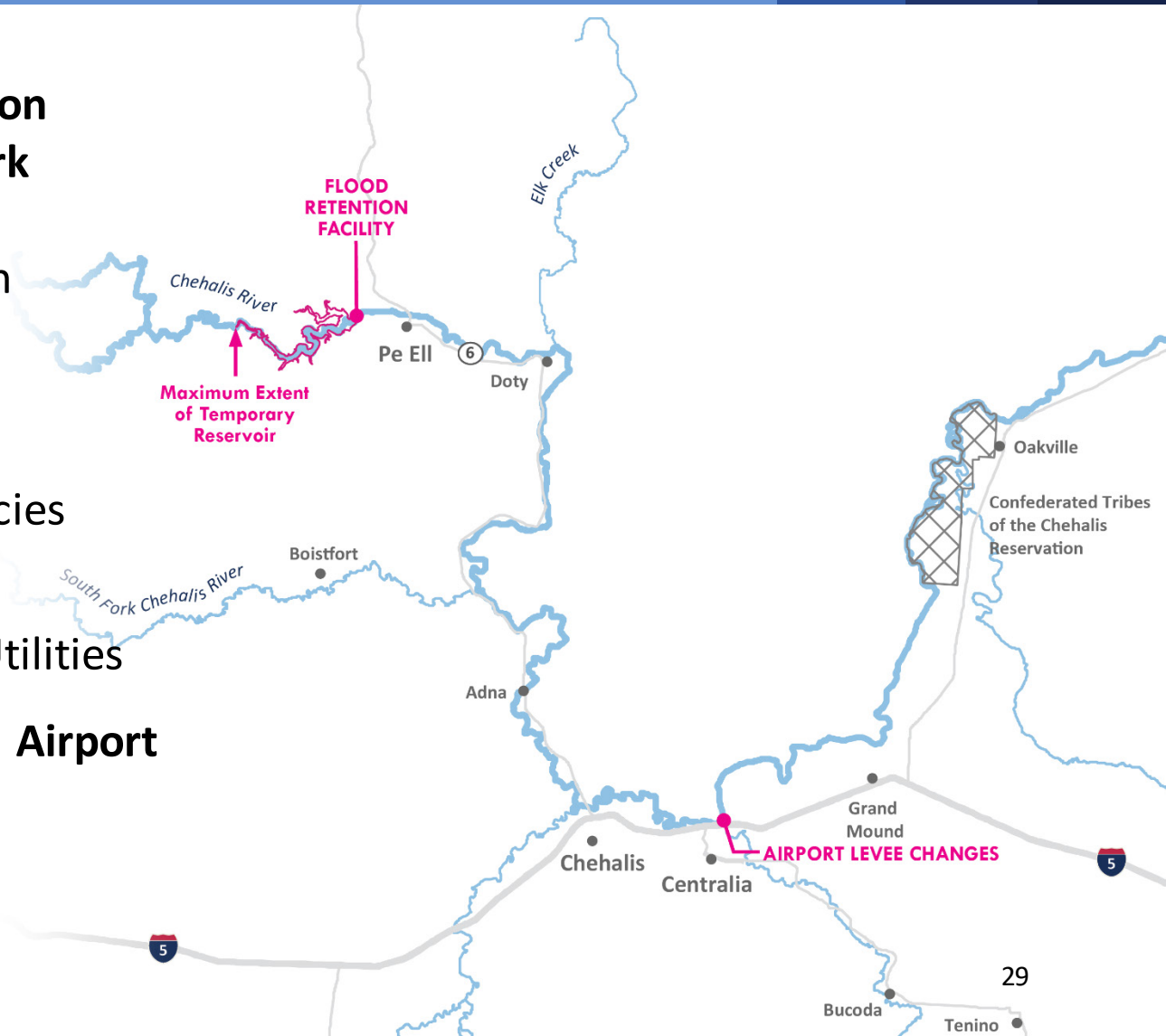
- Environmental Health and Safety
- Water
- Fish Habitat
- Fish and Aquatic Species

Near Pe Ell

- Public Services and Utilities

Near Chehalis-Centralia Airport

- Wetlands



Significant Adverse Impacts (Flood Retention Structure to South Fork Chehalis River)

WATER

Chehalis River water quality would be significantly affected from construction and operation of the flood retention facility

- Water temperature increases of up to 5.4°F and decreased dissolved oxygen would affect Chehalis River water quality for about 20 miles downstream of the facility.
- Turbidity would increase when water is released from the temporary reservoir and after storms.

Significant Adverse Impacts (Flood Retention Structure to South Fork Chehalis River)

FISH HABITAT

- Changes in the movement of sediment and reservoir inundation would significantly affect fish habitat downstream.
- Peak channel-forming flows would be eliminated and large woody material removed, reducing the habitat downstream.

FISH AND AQUATIC SPECIES

- Construction and operation of the flood retention facility would degrade habitat, increase water temperatures, eliminate spawning areas, and reduce fish passage survivability.
- This would have significant impacts on:
  - Spring-run and fall-run Chinook salmon, coho salmon and steelhead
  - Other native fish like lamprey

Significant Adverse Impacts (Flood Retention Structure to South Fork Chehalis River)

PUBLIC SERVICES AND UTILITIES

- A water supply line for Pe Ell's water system may be affected by construction of the FRE facility and the line could require relocation or improvement.

WETLANDS

- 7 acres of wetlands and 44 acres of wetland buffers would be eliminated for construction of the Airport Levee Changes.

Impacts from the Proposed Project

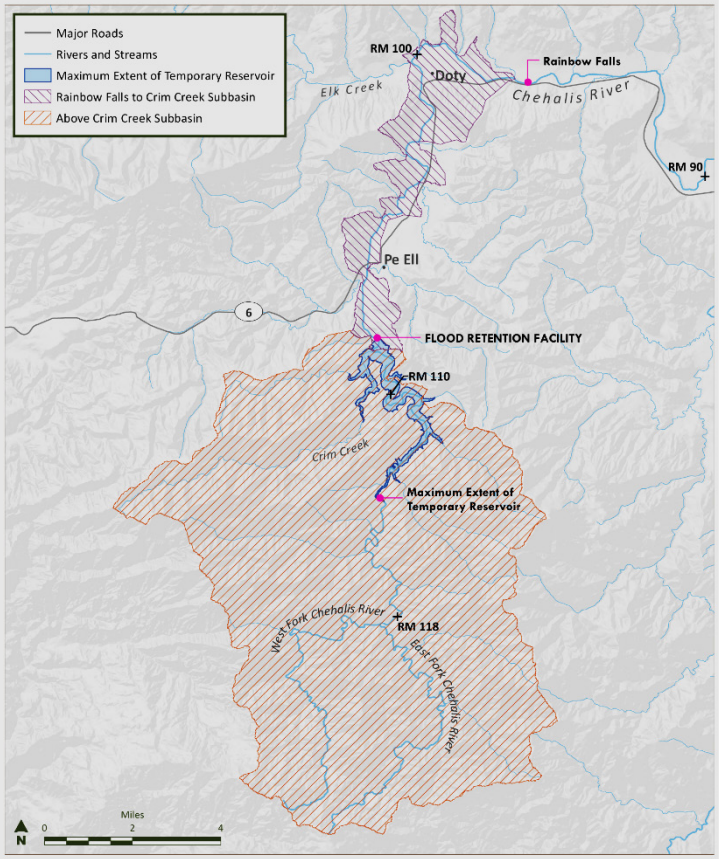
TRIBAL RESOURCES

- Tribal resources could be impacted by the significant impacts to fish, wildlife, and habitat
- Determinations of significance and mitigation would be addressed through government-to-government consultation

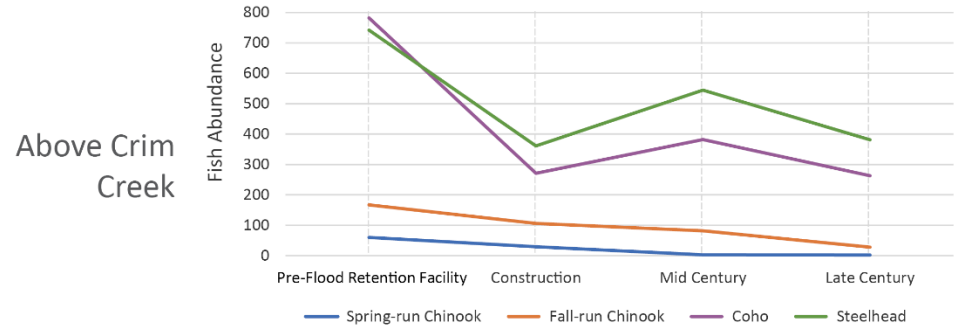
CULTURAL RESOURCES

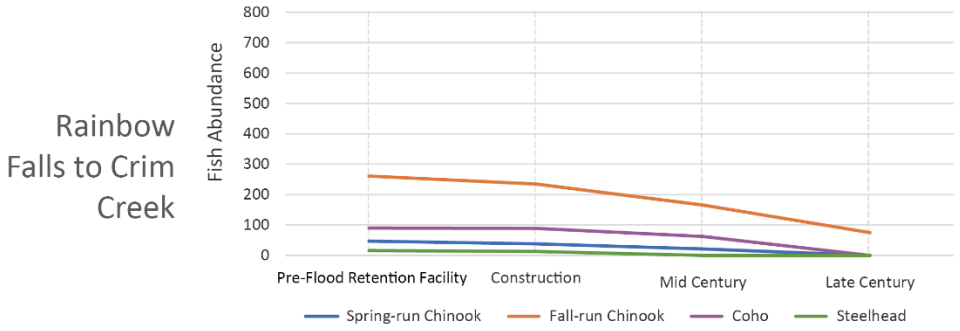
- The EIS identifies cultural and historic resources which could be impacted, including archaeological sites and Traditional Cultural Properties
- Determinations of significance and mitigation would be addressed through the current National Historic Preservation Act Section 106 process
- This process is led by the U.S. Army Corps of Engineers and includes tribes, the Applicant, and the Washington Department of Archaeological and Historic Preservation

Salmon and Steelhead



Predicted Changes in Fish Abundance

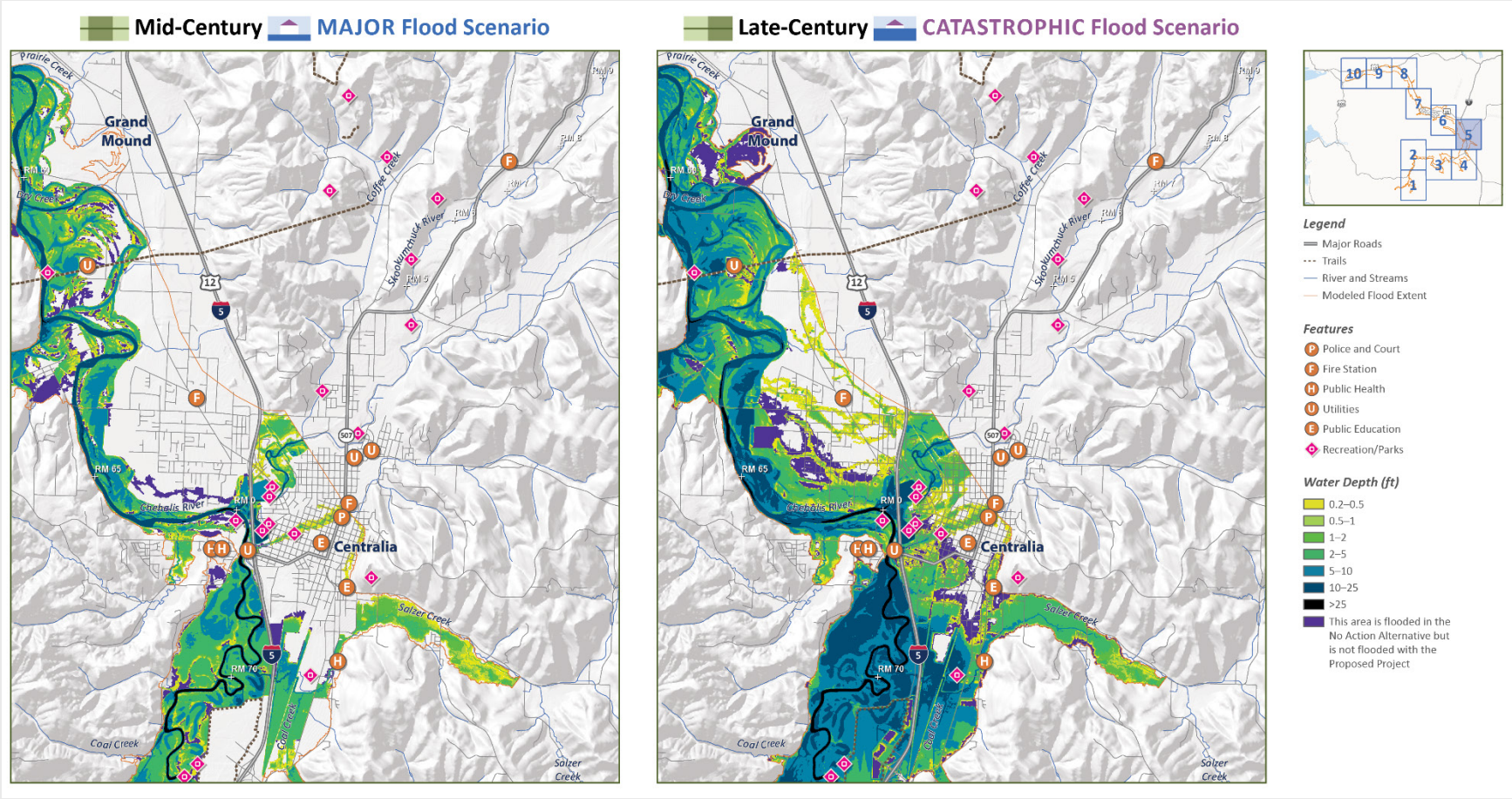




Salmonid Impacts

- The subbasin upstream of Crim Creek supports genetically unique populations of salmon and steelhead.
  - The proposed project would result in a loss of genetic diversity within and among populations of each species across the Chehalis Basin.
- Spring-run Chinook spawn in 3 main areas within the Chehalis Basin.
  - The proposed project would significantly affect 1 of these 3 important spawning areas.
- Salmon and steelhead in the subbasins evaluated make up the following percentages of the Chehalis Basin population:
  - About 1.2% to 3.4% of spring-run Chinook salmon, fall-run Chinook salmon, and coho salmon
  - About 15.7% of steelhead
- Reductions in the number of salmon and steelhead from the Proposed Project are significant because they bring population abundances even further below 70% of historical abundance.
- The Proposed Project could affect future restoration options in the subbasins above and below Crim Creek and within the larger basin for the fish species and habitats they rely on.

Water Model Map Example



Modeled Flood Depths Example
(Draft EIS, Exhibit 5.1-4, Catastrophic Flood Event)

FACILITY	MID-CENTURY		LATE-CENTURY	
	WITHOUT THE PROPOSED PROJECT	WITH THE PROPOSED PROJECT	WITHOUT THE PROPOSED PROJECT	WITH THE PROPOSED PROJECT
PE ELL				
Pe Ell School	No flooding	No flooding	No flooding	No flooding
DRYAD				
Leudinghaus Road east of Chandler Road	5.0	No flooding	6.0	No flooding
Rainbow Falls State Park (river channel at west end of park)	27.8	20.2	28.9	21.4
CENTRALIA-CHEHALIS				
Centralia Police Station	No flooding	No flooding	0.2	0.2
Washington Elementary School	3.0	1.9	4.4	2.1
Washington State Patrol	2.3	No flooding	3.8	No flooding
Veterans Memorial Museum	0.8	0.2	1.2	0.4
Valley View Health Center	1.9	No flooding	3.3	0.1
Riverside Golf Course (clubhouse)	3.8	2.5	4.9	3.8
Fire Station 3 District 16	2.5	No flooding	4.6	No flooding
I-5 north of SW 13th Street Interchange (Exit 76)	1.8	0.7	2.3	1.4
I-5 Interchange at NW Chamber of Commerce Way	7.0	0.4	8.4	4.7
I-5 at Mile Post 81	1.9	No flooding	3.2	0.3
SR 6 and River Road	0.9	No flooding	2.2	No flooding

Depths are in feet

Impacts to Communities

- The flood retention structure must meet dam safety design requirements, including designing for earthquake events.
  - While very unlikely (a chance of 1 in 2.5 billion), if ground shaking from a large earthquake damaged the facility while the reservoir holds water, the impacts to people, infrastructure, and the environment would be significant and unavoidable.
  - This would also disproportionately affect environmental justice populations.

- The project would reduce flood levels downstream. The amount would vary by location and size of the flood. Below is information for a catastrophic flood scenario.

Impacts to Infrastructure

Downstream of the flood retention facility, flood levels and duration of flooding would be reduced.

- The Proposed Project would not cause significant adverse impacts to infrastructure.
- However, many locations would still experience flooding during a catastrophic flood.
- The EIS identified this for:
  - I-5 and SR 6
  - Local roads
  - Public service facilities
  - Recreational facilities

Impacts to Transportation

- The proposed project reduces the flood levels at the Chehalis-Centralia airport by 50% for a catastrophic flood in late-century. It reduces the duration of flooding from 60 hours to 40 hours.

- For I-5 interchanges analyzed in the draft EIS:
  - 6 of 7 interchanges would be inundated for less than 24 hours under the late-century catastrophic flood scenario.
  - One I-5 interchange would remain flooded for 48 hours.
  - Actual freeway closure times would vary based on the Washington Department of Transportation's need to prioritize the safety of the traveling public, which requires additional preparation and recovery time and involves closing approximately 20 miles of I-5 whenever any portion within that stretch is underwater.

Mitigation Proposed in the EIS

- Mitigation is proposed for the Flood District to develop and implement multiple mitigation and management plans.
- The plans must be developed in coordination with and approved by applicable local, state, and federal agencies and tribes.
- The significant adverse impacts would be unavoidable unless the plans meet regulatory requirements and implementation is feasible.

Mitigation and Management Plans Proposed in the EIS

- Fish and Aquatic Species and Habitat Plan
- Greenhouse Gas Emissions Mitigation Plan
- Large Woody Material Management Plan
- Recreation Mitigation Plan
- Riparian Habitat Mitigation Plan
- Stream and Stream Buffer Mitigation Plan
- Surface Water Quality Mitigation Plan
- Vegetation Management Plan
- Wetland and Wetland Buffer Mitigation Plan
- Wildlife Species and Habitat Management Plan

Alternatives Analysis

No Action and Local Actions Alternatives

- Do not include the Proposed Project
- Include climate change as part of the baseline
- Both identify continuing substantial risk to resources from floods
- The No Action Alternative
  - Will result in significant reduction of spring chinook and other salmon species
  - Does not include future actions for the Aquatic Species Restoration Plan
  - Does include the five early action reach projects

Providing Comments

Ways to Comment – from February 27 to May 27

- **Verbal comments at online public events**
  April 2 and April 21
- **Online comment form via the website**
  chehalisbasinstrategy.com/eis/comment-form
- **Mail**
  Chehalis River Basin Flood Damage Reduction Project
  Anchor QEA
  1201 3rd Avenue, Suite 2600
  Seattle, Washington 98101

All comments will be valued equally, regardless of how they are submitted.

Where to Find Information

Information about the SEPA EIS and the comment period is available at:

Chehalis Basin Strategy website
http://chehalisbasinstrategy.com/eis/sepa-process/

Ecology's website
https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Office-of-Chehalis-Basin/EIS .

Thank you for participating in the comment period!