

# LARGE SCALE FLOODPLAIN RESTORATION IN THE CHEHALIS BASIN, WA

## MULTIPLE BENEFITS FOR FLOOD REDUCTION, HABITAT AND TRIBAL/PUBLIC BENEFITS

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# PRESENTATION FOCUS

Introducing:  
The Basin  
Challenges  
Tribal Approach

Project Example:  
Design  
Construction  
Benefits

Summary

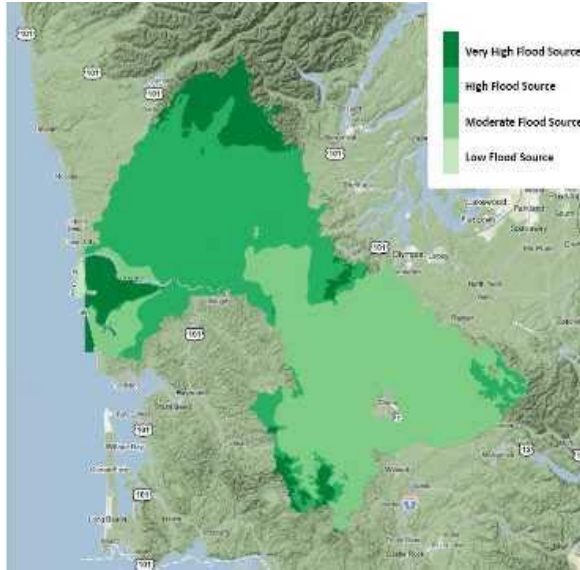


# THE CHEHALIS BASIN



- Second largest river basin in Washington after the Columbia River basin (2,700 square miles)
- Population – 140,000
- Land Uses:
  - Forestry – 87%
  - Agriculture – 8%
  - Urban – 3%
- Major anadromous fish species
  - Fall Chinook
  - Coho
  - Steelhead
  - Chum
- Major game species
  - Elk
  - Deer
  - Ducks
- Important cultural plant and animal species

# CHALLENGES - FLOODING



Since 1970, the Chehalis River Basin has experienced seven catastrophic flood events. A storm in 2007 brought floods to Lewis County that caused an estimated \$166 million in damage to personal property, agricultural land, local businesses, and transportation systems such as Interstate 5 (the main west coast transportation corridor).

# CHALLENGES – MAINTAINING FISHERIES

- Thirty one anadromous stocks\*
  - Two spring Chinook, seven fall Chinook, two chum, seven coho, two summer steelhead, eight winter steelhead, one bull trout/Dolly Varden and two coastal cutthroat stocks
  - Twenty Stocks are identified as “healthy”
  - Three stocks are “depressed”
  - Seven stocks are “unknown”
  - One stock is “disputed” (not in good shape)
- Nineteen native fish species known or suspected to be present\*\*
- Two introduced species
- All have subsistence and cultural value to the Tribes

\*SASSI, 1993, WDFW, 1998 and 2000

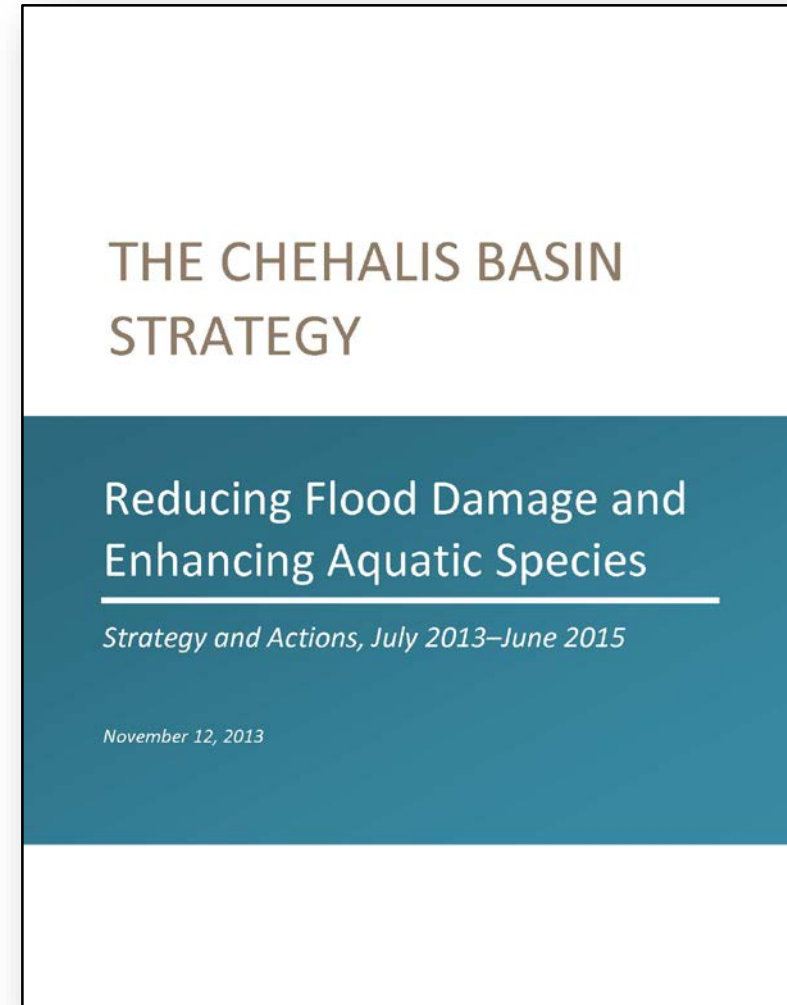
\*\*Hiss and Knudsen 1992, Wydoski and Whitney 1979, WARIS/PHS data base, Baitis and Kuzis 1999, Parton et al. 1997



# CHALLENGES – POLITICAL/COST EFFECTIVENESS

*“Although the challenges in the Chehalis Basin are significant, there is opportunity, momentum, and foresight among Basin leaders and residents, legislators, the Governor, and state agencies, to address the two related opportunities of aquatic species restoration and flood-damage reductions...”*

Chehalis Basin strategy: Governor’s Chehalis basin work group 2014 recommendation report, November 2014



# TRIBAL APPROACH

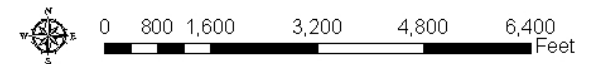
“In the old days we gathered sacred roots and berries. We fished the Chehalis, Black, Cowlitz, Satsop, Wynoochee, Elk, Johns, Skookumchuck, and Newaukum rivers. Our people fished and hunted from the mountains, across the prairies, to Grays Harbor and in the lower Puget Sound. In the old days the baskets carried and stored our foods. We relied upon the baskets, the rivers, the land, the roots, the berries, the fish, and the animals. Our lives were tied together by the Creator.”

-Liichaata, “Just These Few Words”



# TRIBAL APPROACH

- Restrict development in the flood plain.
- Compensate for past fill and create small storage areas to slow flood waters and temporarily hold them to lower peak flows and improve water quality.
- Give the river room to move.
- Reconnect flood plains
- **Utilize multi-benefit restoration projects to restore natural flood plains and their beneficial functions.**



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# PROJECT OVERVIEW

## Previous Use:

- Agricultural lands within the 100 year floodplain

## Current Owner:

- Chehalis Tribe

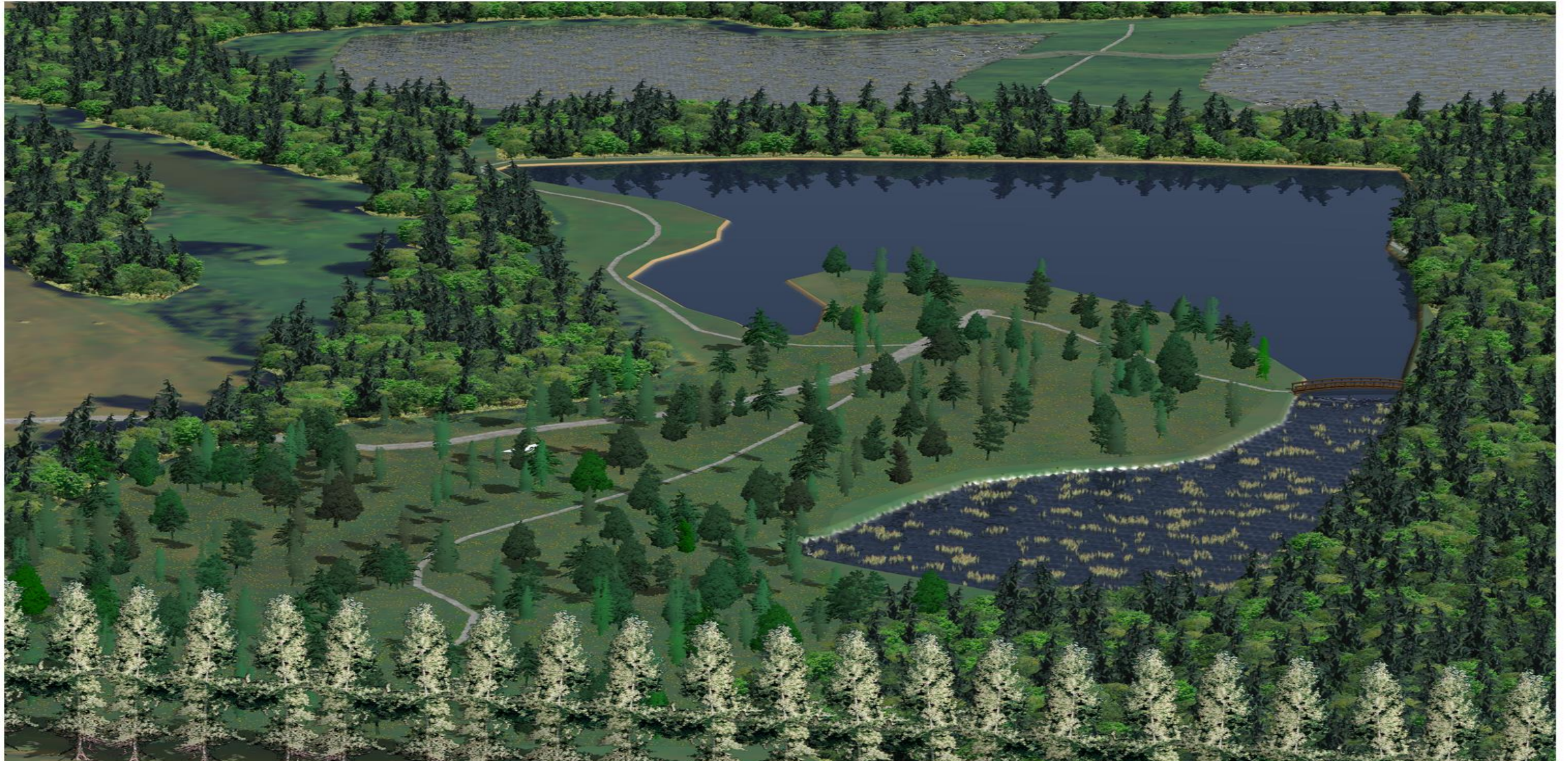
## Time line:

- Start design and permitting March 2014
- Construction bid – August 2014
- Construction complete – October 2015

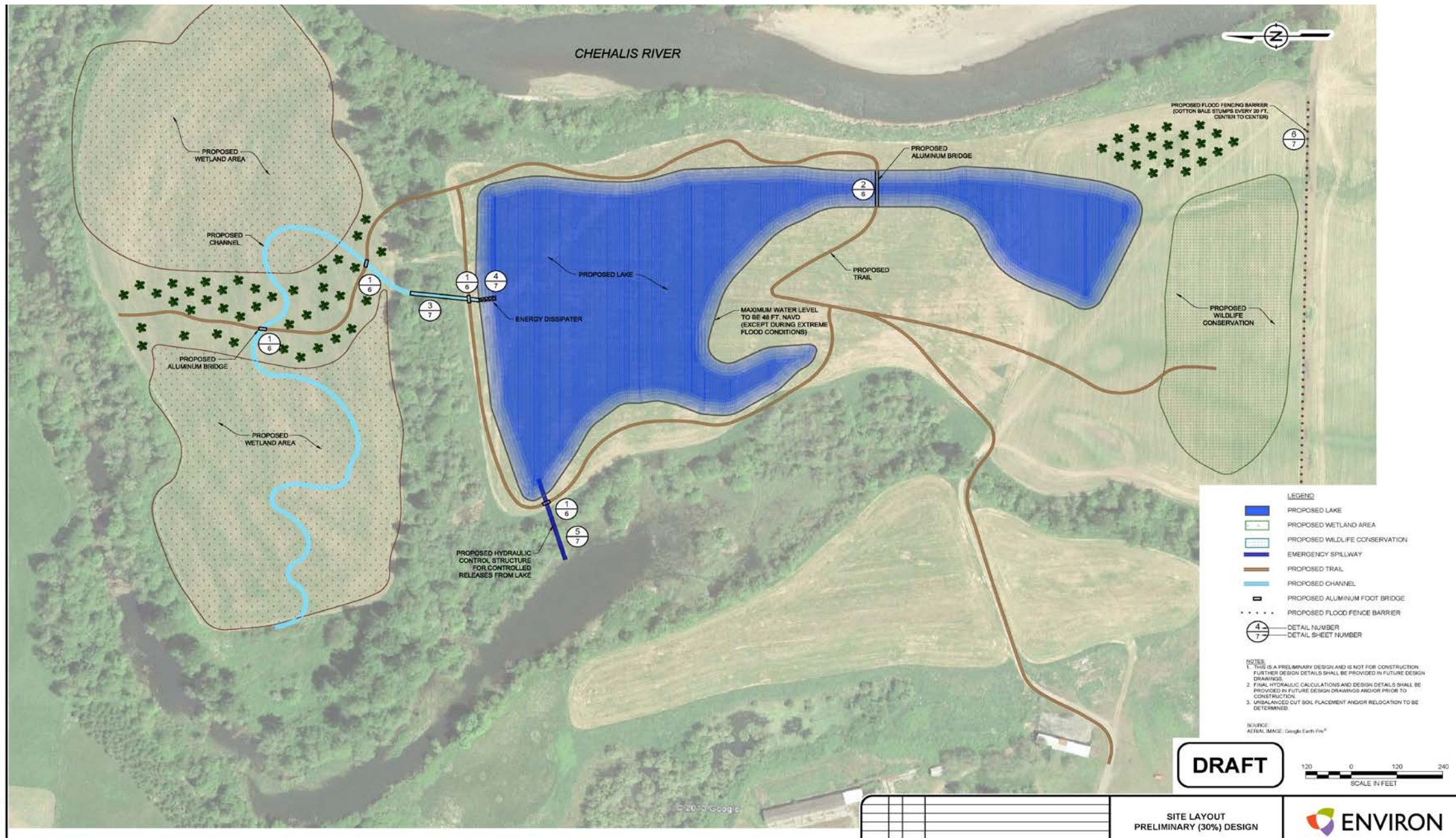
## Objectives:

- Improve water retention in the area by removing floodplain material.
- Increase aquifer recharge of the area.
- Slow waters down thus decreasing peak flood levels downstream.
- Increase water quality.
- Improve fish habitat for spawning and rearing.
- Improve hydraulic complexity of the stream.
- Construct a highly visible demonstration project to encourage additional channel naturalization projects.

# CONCEPTUAL DESIGN



# SITE LAYOUT



PLAN\_202406

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# CONSTRUCTION – WATER RETENTION AREAS



# CONSTRUCTION - ENGINEERED WETLANDS



# CONSTRUCTION



# REVEGETATION AND RECOVERY



# BENEFITS AND SERVICES

- Flood Reduction
  - More than 100 acre feet of water storage
  - Substantial peak flow delay
  - Groundwater recharge
- Fisheries – salmon and other native fishes
- Wildlife – amphibians, reptiles, birds and mammals
  - Rearing/foraging habitat
  - Spawning/breeding habitat
  - High flow/velocity refuge/cover
- Vegetation - Conversion of Agricultural Land
  - Wetlands and open water
  - Riparian / Browse
- Tribal and Public Services
- Subsistence and Sport
  - Hunting
  - Fishing
  - Vegetables
- Cultural
  - Tribal traditions
  - Threatened and endangered species
- Recreation
  - Swimming
  - Bird watching
  - Picnics and gatherings



# PRESENTATION FOCUS

## NET ECOSYSTEM SERVICES ANALYSIS (NESA)

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# SUMMARY

- Directly addresses basin-wide issues
- Substantial Tribal and public benefits
- Large scale and multiple benefits
- Ecosystem-driven
  - Floodplain reconnection
  - Aquatic habitat enhancement
  - Riparian and terrestrial habitat enhancement
- Unprecedented time-line from beginning to completion
- Extremely cost-effective
- Exemplary project and model for future projects

# THANK YOU

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