



# CHEHALIS BASIN STRATEGY LOCAL ACTIONS PROGRAM

January 21, 2021



A photograph of a rural landscape where a large body of water has flooded the area. In the middle ground, a barn with a red roof and a tall, white, cylindrical silo are partially submerged. The water reflects the surrounding trees and sky. The background is a dense forest of bare trees. The foreground shows a grassy field with some utility poles. The text 'FLOODPLAIN STORAGE' is overlaid in the center of the image.

# FLOODPLAIN STORAGE

# BOARD DESIRED OUTCOMES

- **X percent of all structures in each county that could be flooded by the 2080 predicted 100-year flood levels in the basin would no longer be vulnerable to flood damage...** (Outcome 1: Valuable structures protected from mainstem, catastrophic flooding).
- **X percent of all critical facilities that could be flooded by 2080 predicted 100-year flood levels would no longer be vulnerable to flood damage...** (Outcome 5: Critical Facilities Protected).
- **A substantial reduction in the overtopping and closure of Interstate 5 (I-5) and the BNSF rail mainline would be achieved for 2080 predicted 100-year flood levels...** (Outcome 6A: Transportation routes protected).
- **A substantial reduction in the closures of State Highways 6 and 12 due to flooding would be achieved, and alternative routes would be available...** (Outcome 6C: Transportation routes protected)

# FLOOD STORAGE PREVIOUS STUDIES

General Reevaluation Report for the Centralia Flood Damage Reduction Study (USACE 2003)

- Options included distributed upstream storage, floodplain reconnections, enhanced floodplain storage and flow constriction
- Finding: Did not adequately reduce 100-year flood water levels

Restorative Flood Protection Alternative for Upper Chehalis Basin and Newaukum River (Abbe et.al. 2016 and 2020)

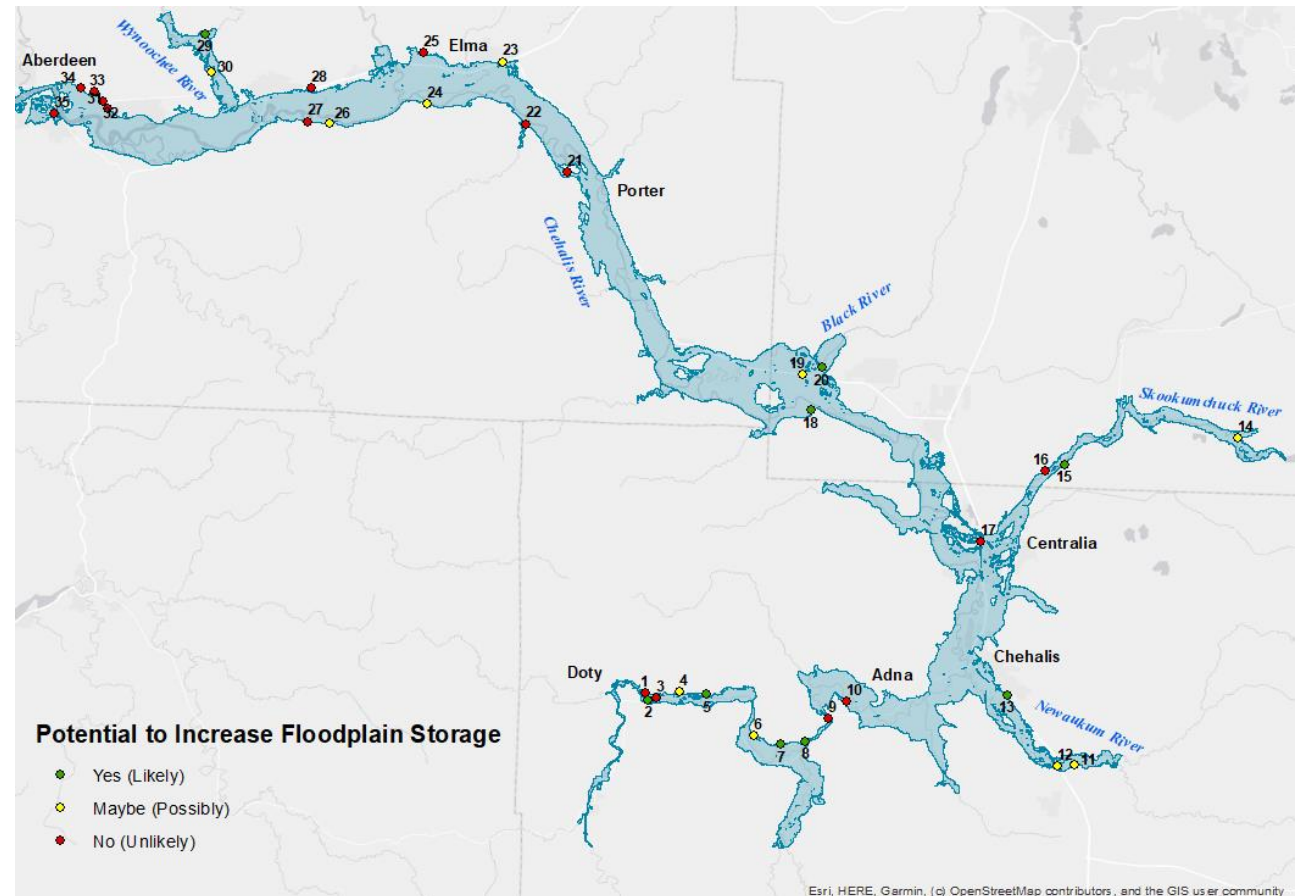
- Considered broad improved floodplain connectivity and floodplain “roughening” to enhance floodplain storage across wide range of flows from 2-year to 100-year late century conditions
- Finding: Benefits at lower flood levels, but limited reductions at 100-year flood water level

City of Chehalis Wastewater Treatment Plant Restoration and Flood Storage Master Plan (City of Chehalis, 2020)

- Habitat enhancement and flood storage on 156 acre site near Chehalis; excavates 1.5 million cubic yards (930 acre-feet) of new flood storage volume along mainstem Chehalis

# NEW EVALUATION OF FLOOD STORAGE

- Used latest 2D model results for 2080 100-year flood (WSE, 2019)
- Identified areas for new or augmented flood storage
- Quantified potential additional storage volume
- Total potential storage in 19 most viable locations is about 1,550 acre-feet (locations in tributaries outside of model not evaluated)





# CONCLUSIONS

- The opportunity for additional floodplain storage along the mainstem Chehalis River in a 100-year flood events is limited. This is because flooding during a large event is, in most cases, already valley wall to valley wall.
- Past and recent analyses show that available additional storage along the mainstem Chehalis River and in the South and North forks of the Newaukum River would not provide any beneficial reduction in large flood flows or flood damage in modeled current and modeled future 100-year flood events.
- However, there are potentially significant benefits along tributaries, especially smaller tributaries, or for lower flood events.

# CONCLUSIONS

- Adding floodplain storage should continue to be considered in addressing flood damage in tributaries as one of the several potential solutions for reducing localized flooding problems.
- Additionally, there is potential for a multi-benefit synergy when combining additional floodplain storage with habitat restoration. Although combining flood storage with a habitat project is not likely to have a noticeable effect on flooding during large flood events, it can provide localized benefits and enhance the value of the habitat project.

QUESTIONS?

