

Chehalis Basin Strategy: Reducing Flood Damage and Restoring Aquatic Species

Briefing for Flood Authority

January 15, 2015



History of Flood Damage



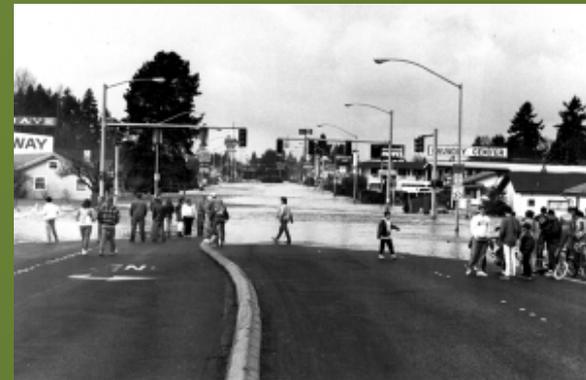
March 1910



December 1933



January 1974



November 1990

2007 Flood

I-5 Under Water
BRUCE ELY /
OREGONIAN



2007 Flood

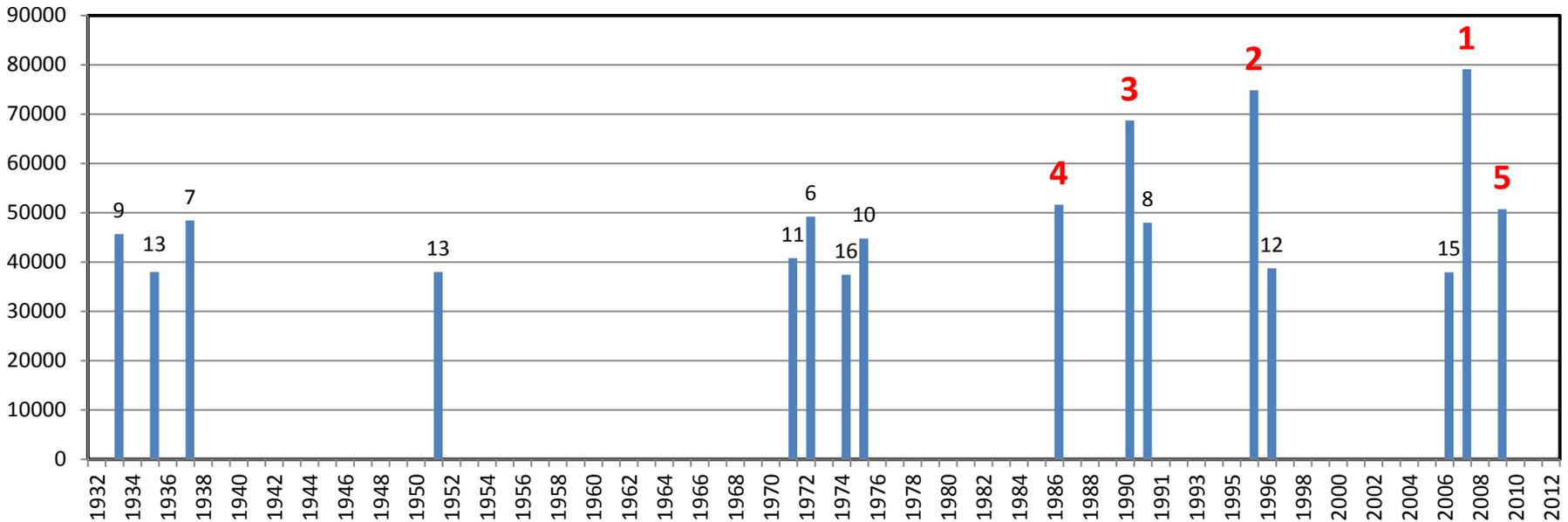
- Hundreds of millions in damage to homes, destroyed
- I-5 closed for 5 days
- Destruction of businesses/jobs
- 1000 livestock killed
- Farms covered with tons of logs and debris
- International focus on human suffering

The Floods are Getting Worse

Interstate 5 closed 1990, 1996, 2007, 2009

Five largest events have all occurred since 1986 -- Frequent floods are getting worse and damage is increasing . . .

100 year flood estimate increase 33% in last 30 years.



FEMA flood damage claims by river basin since 1978 (small % of total damages)

River Basin	Damage Claims (Million)
Chehalis	\$70.4
Snohomish	\$46.4
Skagit/Samish	\$18.5
Cowlitz	\$18.0
Puyallup/White	\$16.1
Cedar/Sammamish	\$14.8
Duwamish/Green	\$ 6.0
Lewis	\$ 5.6
Stillaguamish	\$ 5.4
Nooksack	\$ 5.3
The 51 other river basins combined	\$42 million

Salmon Declines

- Salmon populations are 15-25% of historic levels.



Upper Chehalis (5/31/2010)
JAMES E. WILCOX / WILD GAME FISH
CONSERVATION INTERNATIONAL

CHEHALIS BASIN SALMON & TROUT

OCEAN PHASE

The salmonid lifecycle involves adults maturing in the ocean, migrating back to their home streams and spawning, juveniles growing, and smolts migrating to the estuary to acclimate to saltwater and moving out into the ocean.

WHAT SALMON NEED IN FRESHWATER HABITAT

- Cool, clean water
- Appropriate water depth, quantity and flow velocities
- Upland and riparian (stream bank) vegetation to stabilize soil & provide shade
- Clean gravel for spawning and egg-rearing
- Large woody debris to provide resting and hiding places
- Adequate food
- Varied channel forms

SPAawning PHASE

Chinook
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

Coho
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

Chum
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

Sockeye
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

Steelhead
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

Salmon
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

Trout
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

Cutthroat
Chinook live throughout the Chehalis basin (from near the mouth to the headwaters). Spawning runs from 20-27° to 33° N, up to 17° W. Full spawning runs begin in winter rain.

www.chehalisbasinpartnership.org

Flooding and Habitat Degradation Could Get Worse

- The “100 year flood” level has increased 33% in 28 years.
- Climate change predictions say winter storms will get even worse.
- While drier, hotter summers, lower summer flows and higher water temperatures would exterminate salmon runs.

Changing the Long History of Political Failure

- No action since 1933.
- More than 830 studies.
- Today action is happening . . . Thanks to legislature, Flood Authority and others...



Adna Levee, 2013

CHEHALIS RIVER BASIN FLOOD AUTHORITY

City of Montesano
Home of the Tree Farm
www.montesano.wa

ANOTHER CHEHALIS BASIN FLOOD PROTECTION PROJECT
www.ezview.wa.gov

Wastewater Treatment Plant Flood Prevention Dike

Schedule → February 2014 to April 2014

Budget → \$511,153

Benefit → Protecting essential public infrastructure for all Basin residents

STELLAR J
An engineering consulting company

Parametrix

Montesano WWTP, 2014



Airport Levee, 2014

Farm Pads Constructed Since 2007 Flood

- Conservation Commission and Districts: 10 farm pads constructed for \$760K
- 1500 livestock and valuable farm equipment protected
- Over \$3M in value

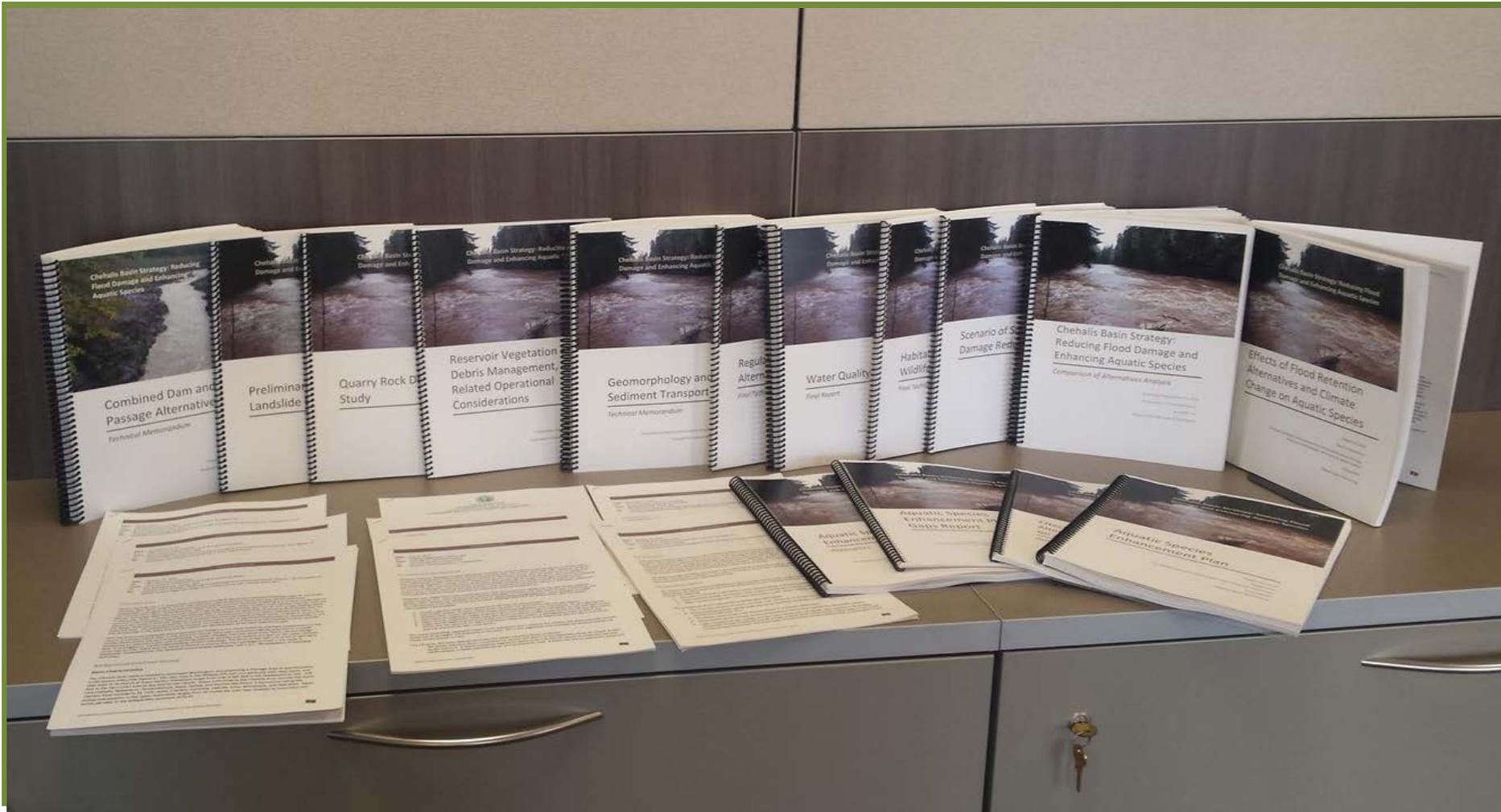
Governor's Chehalis Basin Work Group

- Tasked by Governor to recommend long-term strategy, oversee \$28M legislative appropriation
- Recommendations delivered to the Governor in November, projects on time and under budget.
- Members are:
 - ❑ David Burnett (Former Chairman Chehalis Tribe).
 - ❑ Karen Valenzuela (Thurston County Commissioner, Vice-Chair Flood Authority).
 - ❑ Vickie Raines (Mayor Cosmopolis, Chair Flood Authority).
 - ❑ J. Vander Stoep (Private Attorney, Pe Ell Alternate Flood Authority).
 - ❑ Jay Gordon (President Washington Dairy Federation and Chehalis Farmer).
 - ❑ Rob Duff (Governor's Natural Resource Advisor).
 - ❑ Keith Phillips (Governor's Energy and Environment Advisor).

We looked at everything...

- Levees
- Protecting Interstate 5 Alone
- Forest Practices
- Dredging
- Multiple Storage Options
- Relocation
- Floodplain reconnection
- By-pass channels

Chehalis Basin Strategy Reports by Consultant Team 2013-2014



Current Projects Directed by Flood Authority

GRAYS HARBOR COUNTY

1. Burger King Trail/Dike
2. Dike Bank of Wishkah North of Highway
3. Market Street Dike
4. Southside Dike/Levee Certification
5. Oxbow Lake Reconnection
6. Sickman-Ford Overflow Bridge
7. Mill Creek Dam Improvement
8. Elma-Porter Flood Mitigation
9. Satsop River Floodplain Restoration (Phase I)
10. Wishkah Road Flood Levee
11. Revetment for Montesano Road, Sewage Treatment
12. Satsop River Floodplain Restoration (Phase II)

BASIN-WIDE PROJECTS

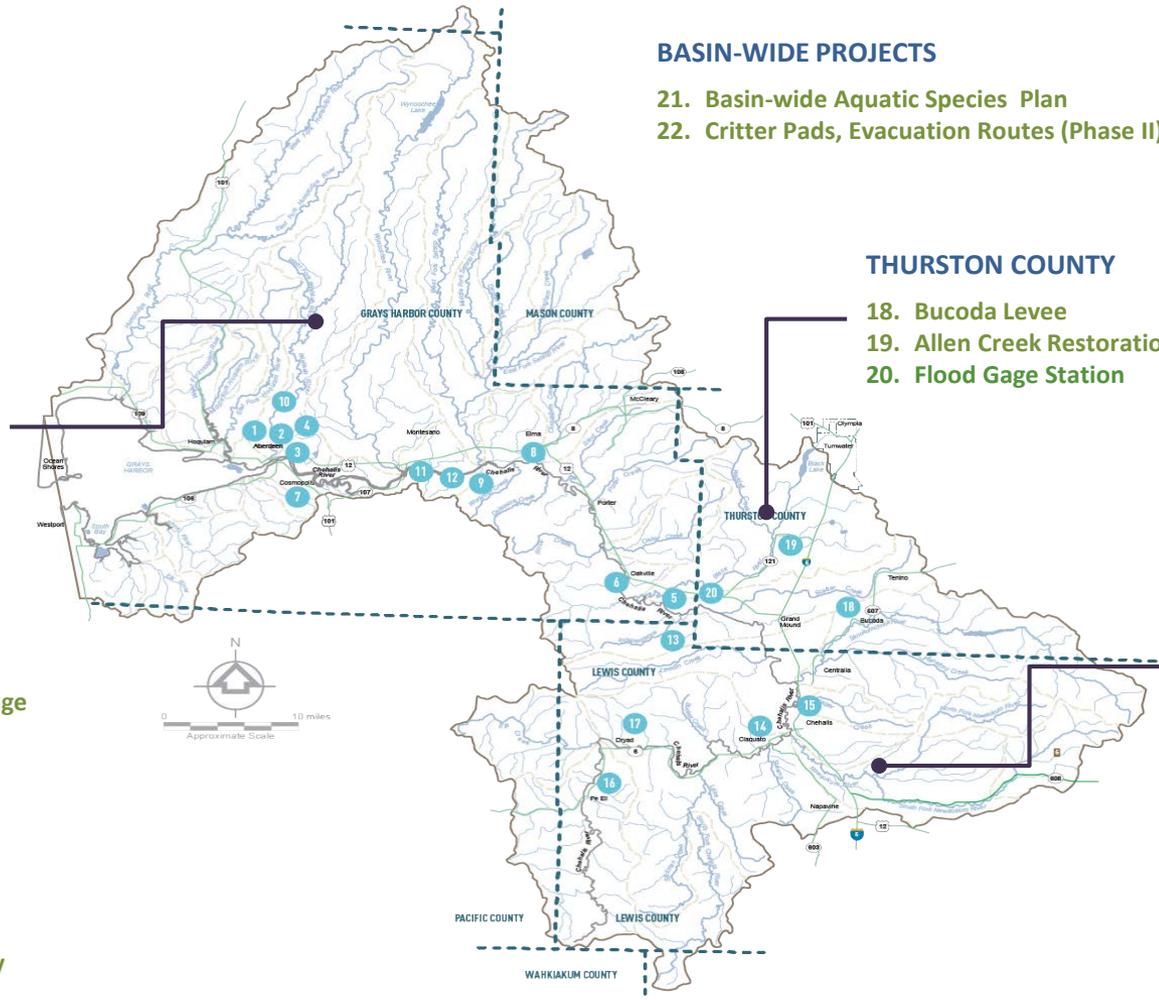
21. Basin-wide Aquatic Species Plan
22. Critter Pads, Evacuation Routes (Phase II) and Geomorphic Analysis

THURSTON COUNTY

18. Bucoda Levee
19. Allen Creek Restoration
20. Flood Gage Station

LEWIS COUNTY

13. Oxbow Reconnection at RM 78
14. Adna Levee
15. Airport Levee (Phase I)
16. Wastewater Treatment Plant Flood Prevention
17. Critter Pads, Evacuation Routes (Phase I)



STATUS: Finished / Underway

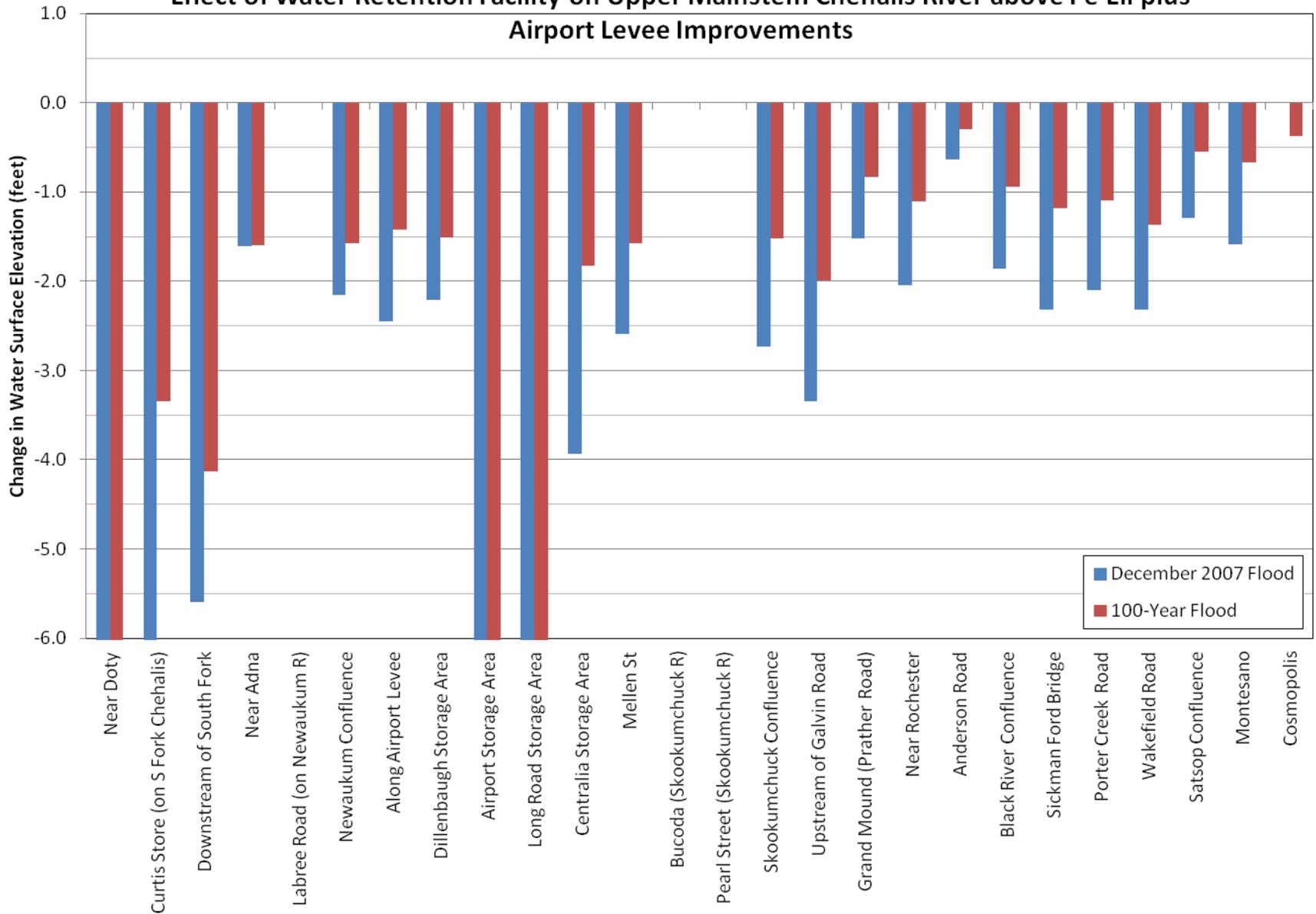
Governor's Work Group Recommendations



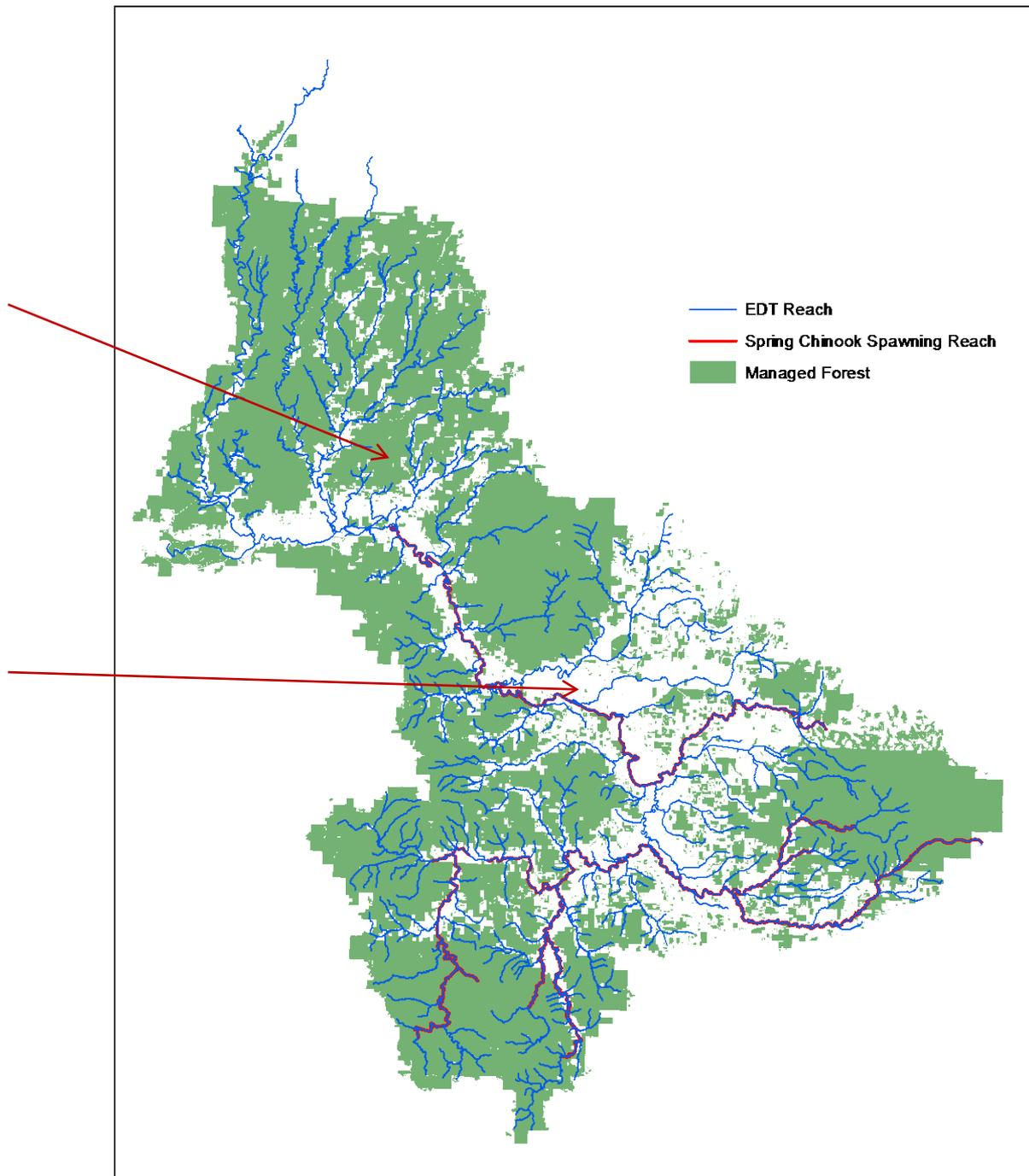
Single Project: Fish and Flood

- Comprehensive habitat restoration: Over 100 miles of riparian and instream improvements plus fixing priority fish passage barriers.
- Water retention dam: either flood only or flood control with augmentation of summer flows.
- Floodproofing and local projects.
- Improved land use management.

Effect of Water Retention Facility on Upper Mainstem Chehalis River above Pe Ell plus Airport Levee Improvements



Restoration
Can
Increase
Salmon
Populations
Up To
50%



Economic Costs and Benefits

- Cost \$500M-\$600M depending on type of dam
- Direct benefits \$720M based on historic record of flooding
- \$3.8B in total benefits including economic multiplier and intrinsic value of fish

Benefits

- Interstate 5 closed for less than 1 day instead of 5 or more.
- Flood proofing, Airport levee and water retention will protect 2000 structures from a 2007 like flood.
- Up to 50 percent increase salmon and benefit for other aquatic species.

“Historic Step Forward”

The Chronicle

The Choice

- Move forward with recommended project,
or
- No action: \$3.5 Billion in damage over the next 100 years and decimation of salmon runs.

Next Steps

- Legislative decision on budget.
- Initiate permit process with programmatic EIS
- Implement immediate actions to restore habitat and reduce flood damage.
- Continue community awareness and preparedness for floods.

Recommended Next Biennium Actions

- Advance Overall Strategy and Programmatic EIS
- Refine the Aquatic Species Plan (ASRP)
- Water Retention Design, Analysis, Initial Permit Process
- Public Involvement
- Early Implementation of Aquatic Species Plan
 - Culverts
 - Riparian Landowner
- Floodproofing and Farm Pads
- Small Flood Projects

Recommended Next Biennium Budget

	Work Group	Governor
Advancing Long Term Strategy	\$27M	\$20M
Early Actions	\$26M	\$10M
Total	\$53M	\$30M

The major differences between the Work Group's recommendation and Governor's budgets are:

- Engineering design for water retention
- Less early actions for habitat restoration and local projects to reduce flood damage