

Chehalis River Basin

*Reducing Flood Damage and
Enhancing Aquatic Species*

2:00 p.m., June 12, 2015

Kaylee Osowski



Today's Presentation . . .

- Provide update
- Encourage discussion

- Key messages . . .

1. Broad agreement -- For first time in a century there is progress across the Basin on next steps to reduce flood damage and enhance salmon and aquatic species.

2. Basin-wide strategy -- An action-oriented, multi-phased Basin-wide strategy is needed to protect communities along the river and to enhance aquatic species.

3. Collaboration is key -- WA State Legislature, Governor's Office, Governor's Chehalis Basin Work Group, Chehalis River Basin Flood Authority, and WA State Agencies all working together = Action!

4. Fundamental principle -- Solving one's problems doesn't increase another's.



Action . . .



Photos Source: THE CHRONICLE →

June 2015

"Chehalis River Basin Flood Authority"

- **Formed in 2008**
- **Formal body focused on:** (1) flood hazard mitigation throughout the Basin; and (2) decision-making that is . . .
 - ❑ informed by science.
 - ❑ protective of Basin residents/communities.
 - ❑ environmentally appropriate.



- **Basin jurisdictions represented**

- | | | |
|-----------------------|---------------------|-------------------|
| ▶ Grays Harbor County | ▶ Lewis County | ▶ Thurston County |
| ○ City of Aberdeen | ○ City of Centralia | ○ Town of Bucoda |
| ○ City of Cosmopolis | ○ City of Chehalis | |
| ○ City of Montesano | ○ City of Napavine | |
| ○ City of Oakville | ○ Town of Pe Ell | |

"Governor's Chehalis Basin Work Group"

- Appointed by Gov. Gregoire (2012); Re-confirmed by Gov. Inslee (2013).
- Developed Next Steps Framework, \$28.2 capital budget request (2013-15).
- Looking Forward → Tasked by Gov. Inslee to oversee implementation of 2013-15 budget, recommend next steps by mid-November 2014** for: Water retention; I-5; Other Basin improvements; Aquatic species enhancement.
- Members are:
 - ❑ Vickie Raines (Grays Harbor Commissioner, Chair Flood Authority).
 - ❑ Karen Valenzuela (Former Thurston County Commissioner, Vice-Chair Flood Authority).
 - ❑ David Burnett (Former Chairman Chehalis Tribe).
 - ❑ J. Vander Stoep (Private Attorney, Pe Ell Alternate Flood Authority).
 - ❑ Jay Gordon (President Washington Dairy Federation and Chehalis Farmer).
 - ❑ Rob Duff (Governor's Natural Resources and Environment Advisor).
 - ❑ Keith Phillips (Governor's Climate and Energy Advisor).

**** Note:** Next steps delivered and accepted by Governor on 11/24/2014 (see slide 25).

Background . . .

- 2007 Storm -- \$938M Basin-wide damage, \$300M lost economic activity (WA).



Exit 77 (I-5) in Chehalis
STEVE RINGMAN / SEATTLE TIMES



City of Centralia
STEVE RINGMAN / SEATTLE TIMES



↑
← **Photos Source:** LEWIS COUNTY,
DIVISION OF EMERGENCY
MANAGEMENT



**State Route 6,
West of Adna**
MIKE
SALSBURY /
AP

Background . . .

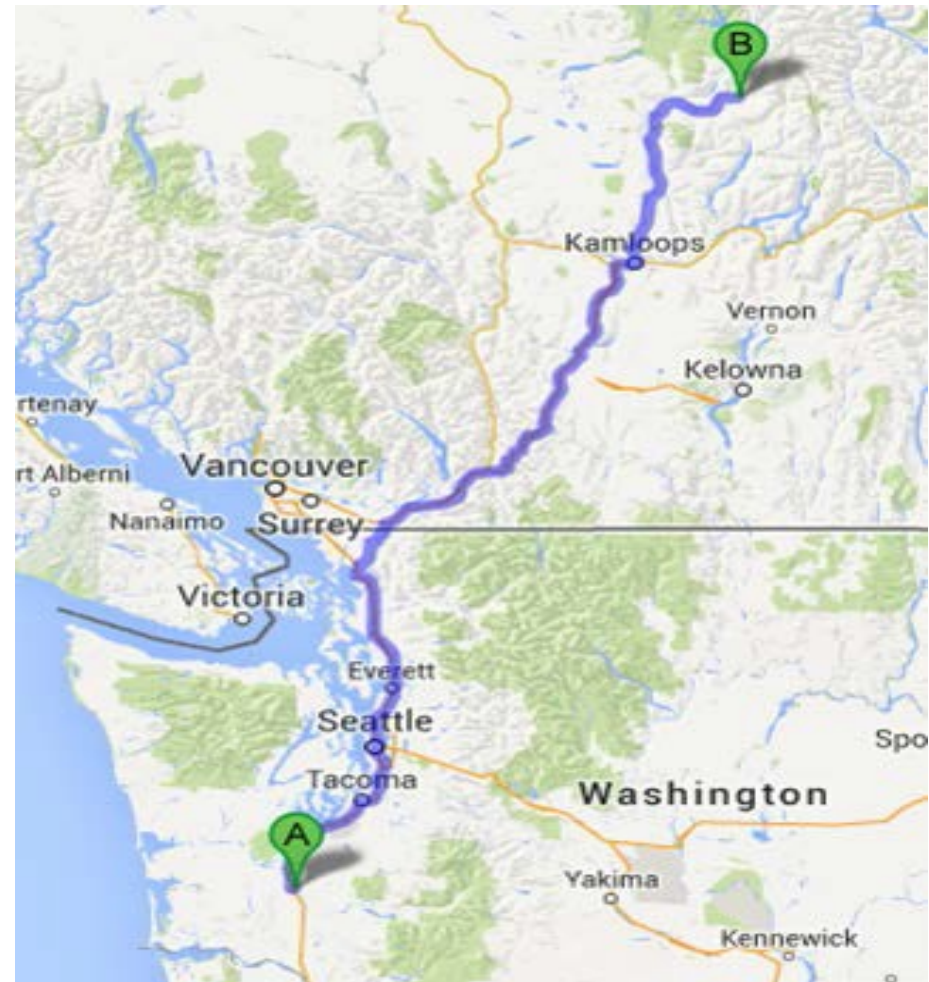
- 2007 Flood -- I-5 and Hwy 507 Interchange looking South.



City of Centralia and I-5
STEVE RINGMAN /
SEATTLE TIMES

Background . . .

- 289,983 acre feet of measured water (12/03-08/2007).
- Equivalent to covering roadway between Chehalis and North of Kamloops with 1 foot of water 1-mile wide or covering . . .
 - 80% of Kitsap County.
 - 69% of Clark County.
 - 59% of Thurston County.

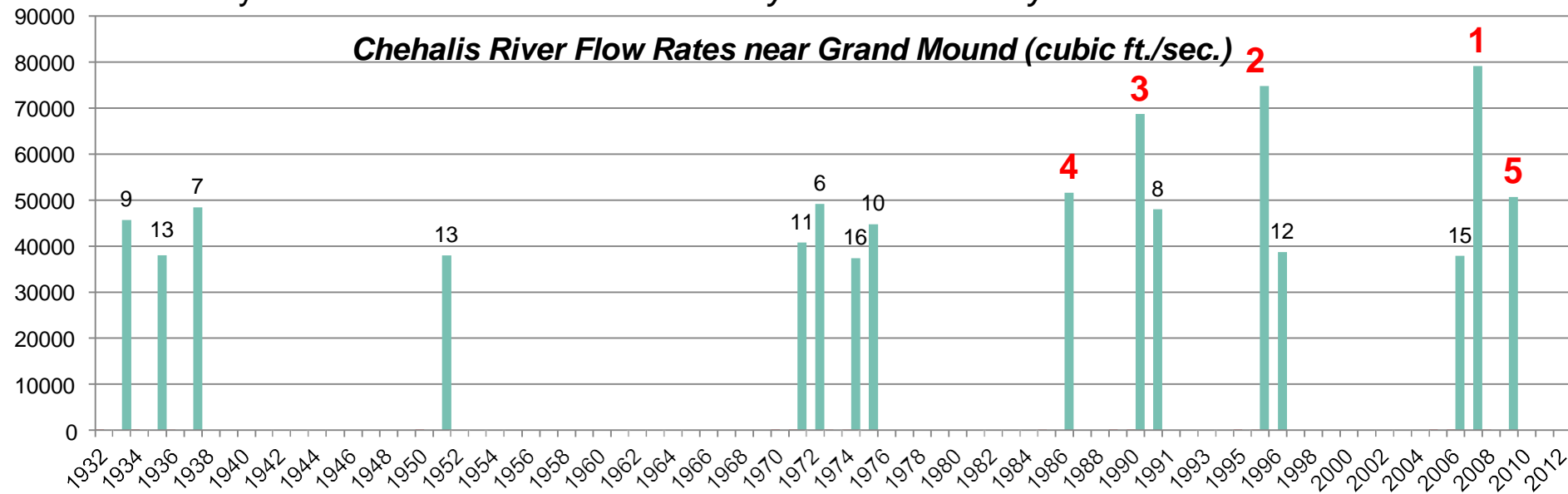


Background . . .

■ Ranked high flow events (1932 - 2012) . . .

- ❑ I-5 closed 1990, 1996, 2007, 2009.
- ❑ Five largest events since 1986 -- *Frequent floods are getting worse and damage is increasing . . .*
- ❑ 100 year flood estimate -- *Increased by 33% in last 30 years.*

Chehalis River Flow Rates near Grand Mound (cubic ft./sec.)



Background . . .

- Chehalis is the second largest river basin in the state, rich in natural resources . . .
- Salmon populations are 15-25% of historic levels.
- TMDL for the basin (<http://www.ecy.wa.gov/programs/wq/tmdl/ChehalisRvrTMDLSummary.html>).



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

CHEHALIS BASIN SALMON & TROUT

OCEAN PHASE

SPAWNING PHASE

The salmonid lifecycle involves adults maturing in the ocean, migrating back to their home streams and spawning, embryos incubating, fry emerging, 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

Chinook
Coho
Chum
Steelhead
Bull trout
Cutthroat

Chinook
Coho
Chum
Steelhead
Bull trout
Cutthroat

www.chehalisbasinpartnership.org

Background . . .

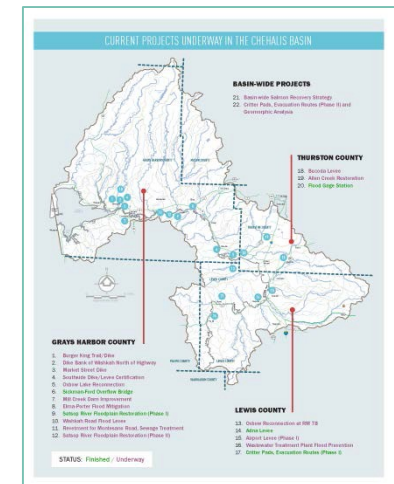
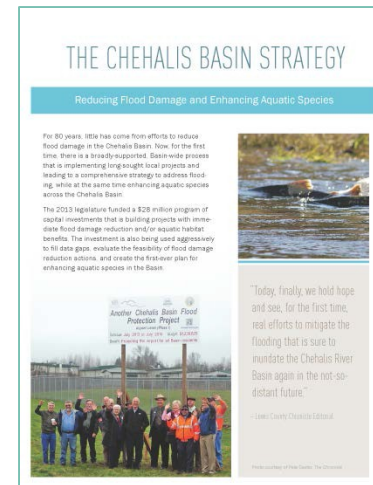
Salmon-habitat potential

Species	Current (#fish)	Natural Conditions (#fish)	Habitat Impairment
Spring Chinook Salmon	3,349	15,287	78%
Fall Chinook Salmon	25,459	46,052	45%
Coho Salmon	24,144	78,986	69%
Winter-run Steelhead	4,557	8,102	44%

Solution = Basin-Wide Approach

Action-oriented, Multi-phased Approach

1. Basin-Wide Relationships
2. Hydraulic Understanding
3. Large Capitol Projects
4. Smaller-Scale Local Projects
5. Land Use, Floodplain Management
6. Enhance Salmon and Aquatic Species
7. Early Flood Warning
8. Outreach, Education and Communication



1. Basin-Wide Relationships



TOWN of BUCODA



WASHINGTON STATE
CONSERVATION
COMMISSION



WASHINGTON STATE DEPARTMENT OF
Natural Resources



Office of Financial Management

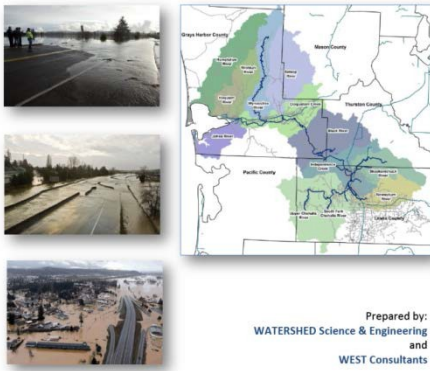
Better information. Better decisions. Better government.

June 2015

2. Hydraulic Understanding

- **Science-based model** -- To inform decision-makers on hydraulic effects of potential flood relief options (at basin-wide and localized scales).
- **108 miles** -- Mouth of Chehalis River upstream to Pe Ell (108 miles).

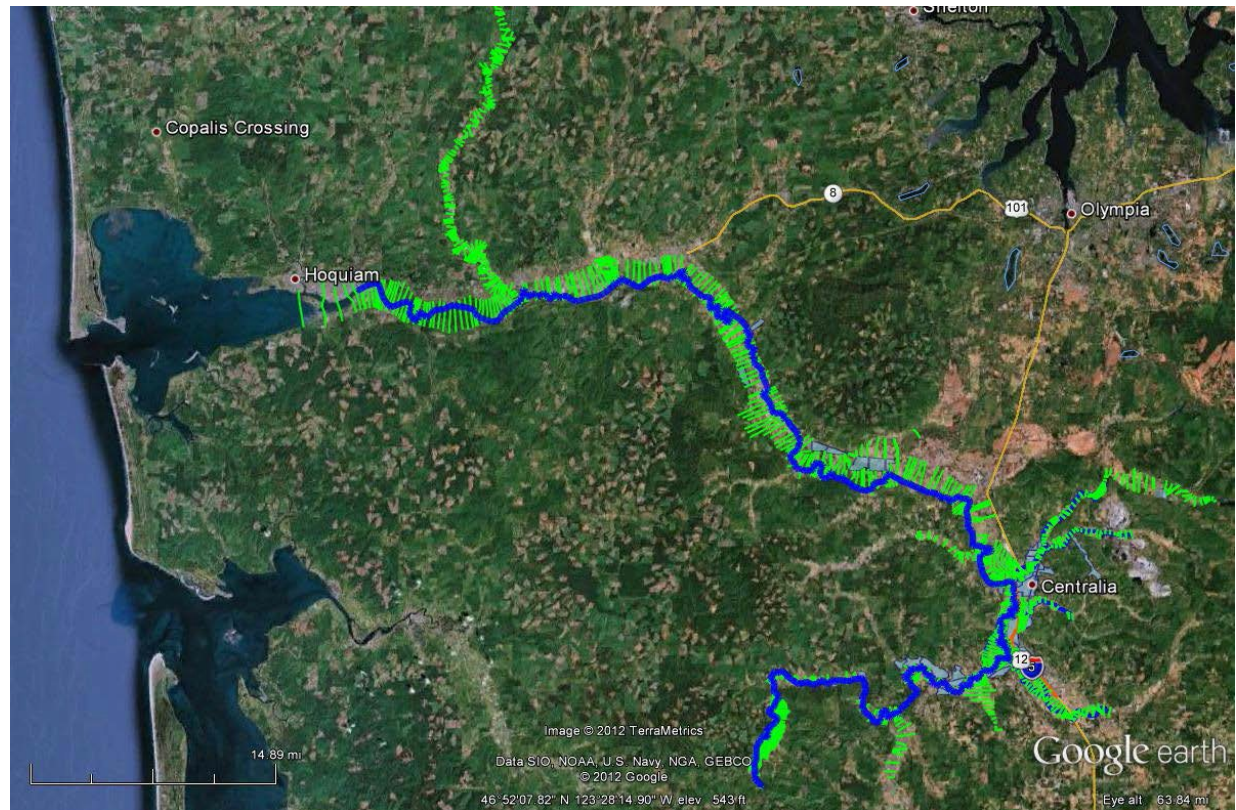
Draft Report - Chehalis River
Hydraulic Model Development Project



Prepared by:
WATERSHED Science & Engineering
and
WEST Consultants

Prepared for:
Chehalis River Basin Flood Authority

July 23, 2012



June 2015

2. Hydraulic Understanding

- **Example: Basin-wide effects analysis**
(Governor's Chehalis Basin Workgroup, 2014 Recommendations Report, 11/25/2014)

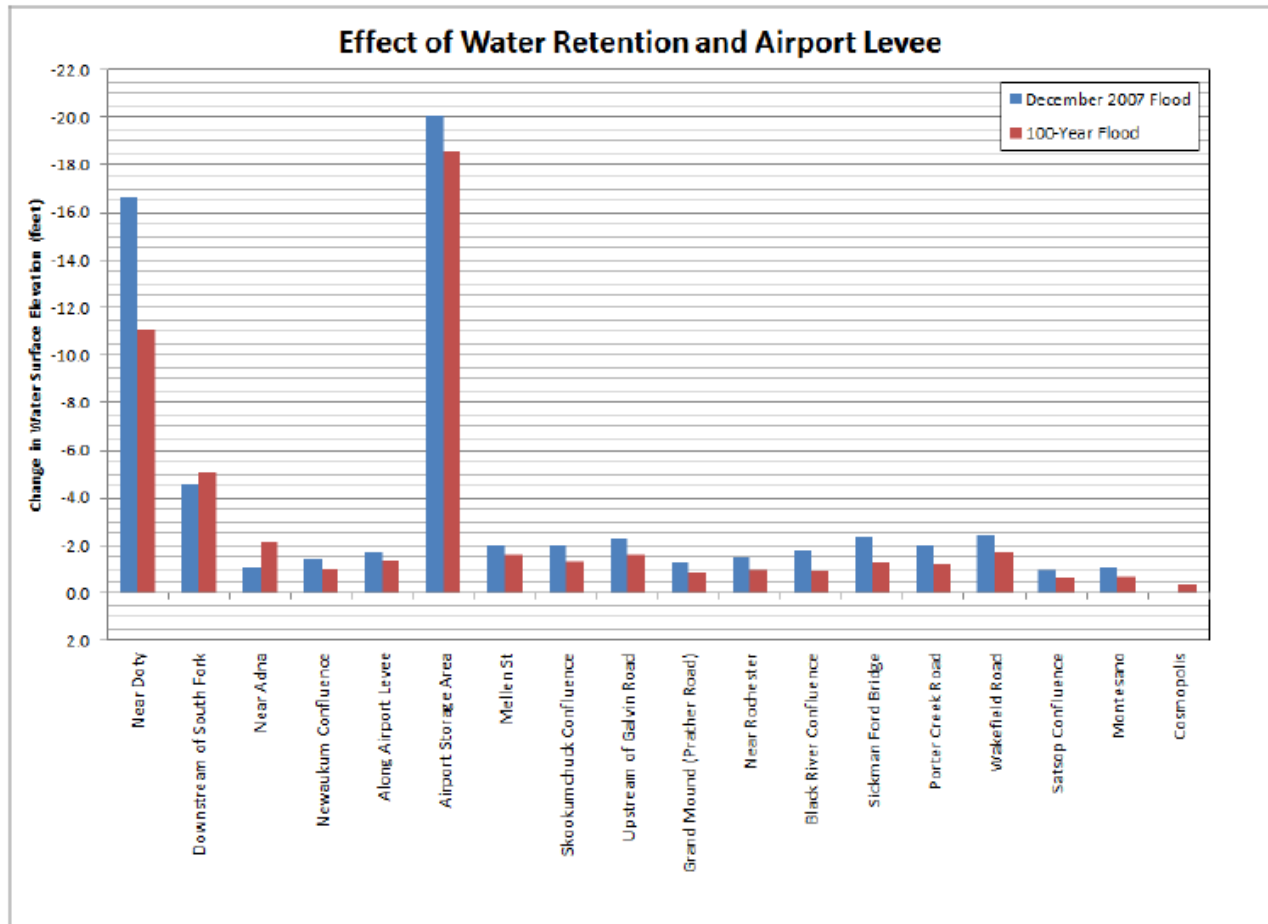


Figure 2: Predicted Changes in Water Surface Elevations from Water Retention and Airport Levee

3. Large Capitol Projects

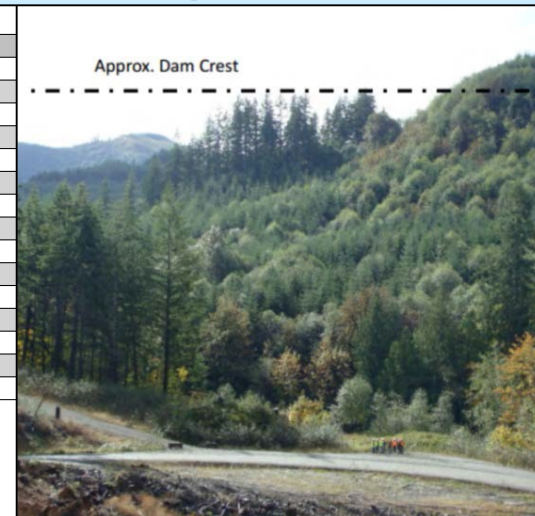


- **Technical team evaluating safety, feasibility of upper basin water retention structure** -- field visits, site and design considerations, world-wide research, etc.
 - Permanent reservoir with fish passage or Run-of-the-river without permanent reservoir.
 - Roller compact concrete or Earthen fill.
 - Flood-control only or Multi-purpose.
- **WSDOT evaluating alternatives to protect Interstate 5** – levees, walls, raise, etc.
- **Comprehensive set of recommendations to Governor, Legislature (11/2014).**

www.ezview.wa.gov/chehalisfloodauthority

Governor's Work Group Final Documents (2013-15 biennium)

File Name	File Size	Description	Category	Date Added
Gov Inslee Letter of Support -- 11-24-2014.pdf	810.1 KB		None	12/02/14 08:55 AM
Governor's Chehalis Basin Work Group Press Release -- 11-24-2014.pdf	37.2 KB		None	12/02/14 08:56 AM
Chehalis Basin Work Group Recommendations Report -- Final 11-25-2014.pdf	1.2 MB		None	12/02/14 08:56 AM
Aquatic-Species-Restoration-Program-Effects-Report_Final.pdf	5.3 MB		None	12/08/14 10:28 AM
Aquatic-Species-Restoration-Program-Report_Final.pdf	8.4 MB		None	12/08/14 10:29 AM
Chehalis-Basin-Strategy-2015-2017-Biennium-Scope-and-Budget_Final.pdf	287.2 KB		None	12/08/14 10:29 AM
Comparison-of-Alternatives-Report_Final.pdf	6.9 MB		None	12/08/14 10:29 AM
Hydraulic-Model-Report_Final.pdf	1.5 MB		None	12/08/14 10:30 AM
Small-Projects-Report_Final.pdf	11.2 MB		None	12/08/14 10:30 AM
Structures-in-Floodplain-Survey-Report_Final.pdf	305.7 KB		None	12/08/14 10:30 AM
Water-Retention-and-Fish-Passage-Report_Final.pdf	47.6 MB		None	12/08/14 10:32 AM
WSDOT-I-5-Chehalis-Flood-Report_Final.pdf	4.6 MB		None	12/08/14 10:32 AM
Basin-Wide Report 11-30-14.pdf	1 MB		None	12/16/14 06:11 AM
CRS Report 11-30-14.pdf	675.1 KB		None	12/16/14 06:11 AM
Rep Loss Strategy 11-30-14.pdf	1.2 MB		None	12/16/14 06:11 AM



← **Photos Source:**
ANCHOR QEA



**Pe Ell Wastewater Treatment Plant
Flood Protection Dike**

**Aberdeen Proposed Northside
Dike/Levee**



4. Smaller-Scale Local Projects

2012 Supplem. Capital Budget:

- \$5.0M – Local projects.

2013-15 Capital Budget:

- \$15.2M -- Local projects, aquatic species enhancement.

2015-17 Capital Budget:

- \$10M (?) – More local projects.

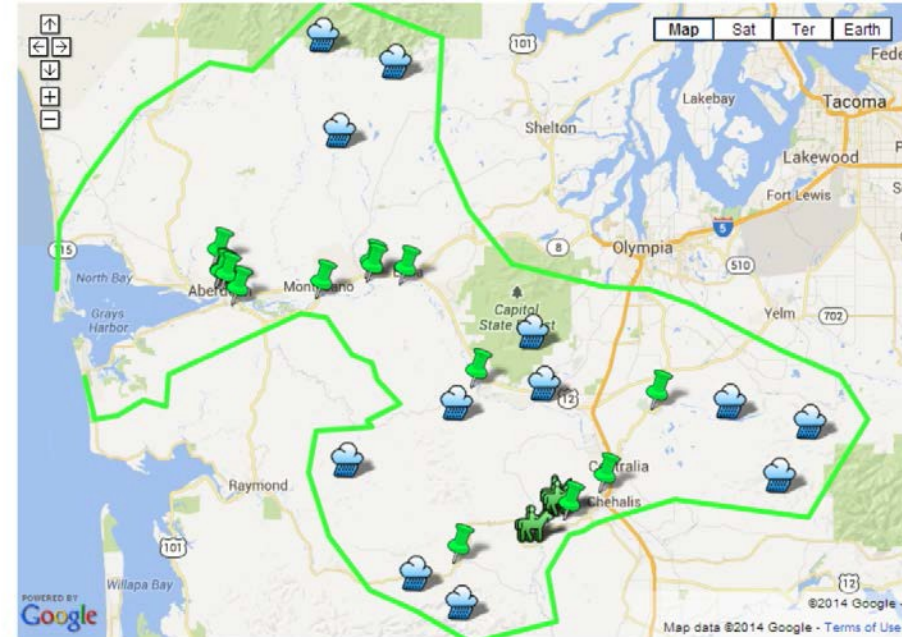
Local Projects Funded (2012, 2013-15):



Critter Pads Funded (2012):



Gages Funded (2011):



https://www.ezview.wa.gov/site/alias_1492/34489/local_projects.aspx



Another Chehalis Basin Flood Protection Project

Wastewater Treatment Plant Flood Prevention Dike

Schedule → February 2014 to April 2014

Budget → \$511,153

Benefit → Protecting essential public infrastructure for all Basin residents

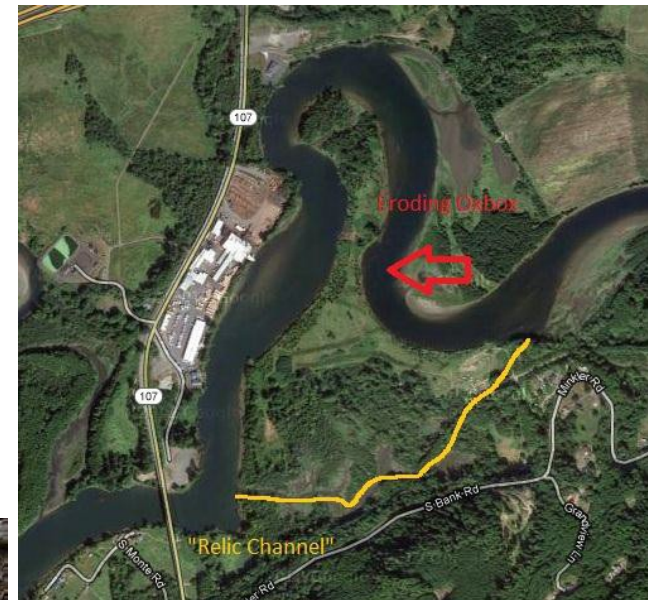
www.ezview.wa.gov



4. Smaller-Scale Local Projects

■ Revetment to Protect Montesano Road, Adjacent Facilities

- ❑ Mary's River Lumber = 120 family wage jobs.
- ❑ State Highway (SR 107) = At risk of damage.
- ❑ Montesano STP = Risk of overtopping.
- ❑ Solutions and Alternative = Balance time, cost, results.
- ❑ Project [website](#).



CHEHALIS RIVER BASIN FLOOD AUTHORITY

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

STELLAR
An employee owned company
Parametrix

Another Chehalis Basin Flood Protection Project

Wastewater Treatment Plant Flood Prevention Dike

Schedule → February 2014 to April 2014

Budget → \$511,153

Benefit → Protecting essential public infrastructure for all Basin residents

www.ezview.wa.gov

5. Land Use, Floodplain Management

- **Analyze local floodplain management programs across the Basin and, where appropriate, make recommendations to:**
 - protect existing homes/businesses.
 - ensure new development does not increase flood hazard risk.
 - identify ways to reduce flood insurance rates.
 - address properties that are repetitively flood damaged.

- **Contract work to be completed by August 31, 2014.**

LEWIS COUNTY NOTICE TO CONSULTANTS FOR:

Request for Proposals (RFP) Floodplain Management Analysis

Lewis County is seeking a qualified consulting firm or team to provide professional services to complete a floodplain management analysis report for jurisdictions in the Chehalis Basin.

PROJECT DESCRIPTION

Lewis County, Fiscal Agent for the Chehalis River Basin flood Authority, is seeking a qualified consulting firm or team to provide professional services to complete a floodplain management analysis report for jurisdictions in the Chehalis Basin; provide technical assistance to explore potential local and regional cooperative efforts that allow jurisdictions to improve local floodplain management, and work with the local governments in the Basin to develop a strategic approach for buyouts, elevating structures, and other techniques to address repetitive loss properties. The work in this proposal is part of the 2013-2015 Chehalis Basin Strategy, a State of Washington effort to reduce flood damage and enhance aquatic species in the Chehalis River Basin. For more information, view the Ruckelshaus Center's Chehalis Basin project site: <http://ruckelshauscenter.wsu.edu/ChehalisFlooding.html>

Interested consultants shall provide a letter of interest, approach/methodology, budget, personnel resume(s), experience related to this project, and client references.

6. Enhance Salmon (Aquatic Species)

- Collect aquatic species, water quality, hydrologic data.
- Model analyses to understand impacts/benefits on fish, wildlife, water quality, sediment, streamflow and flooding.
- Develop DRAFT and FINAL aquatic species enhancement plan.
- Comprehensive set of recommendations to Governor, Legislature (11/2014).



Seine collections (Chehalis River)



Downstream snorkel surveys (Chehalis River)

6. Enhance Salmon (Aquatic Species)

Other Fish and Aquatic Species



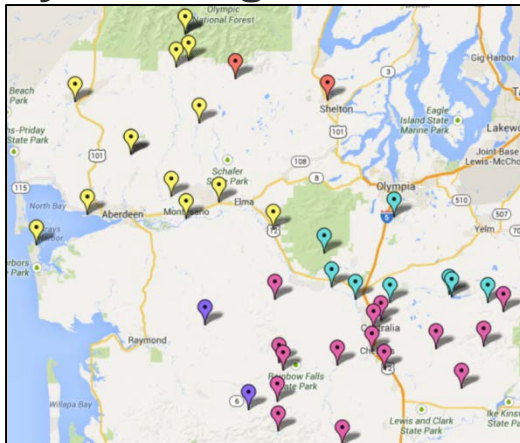
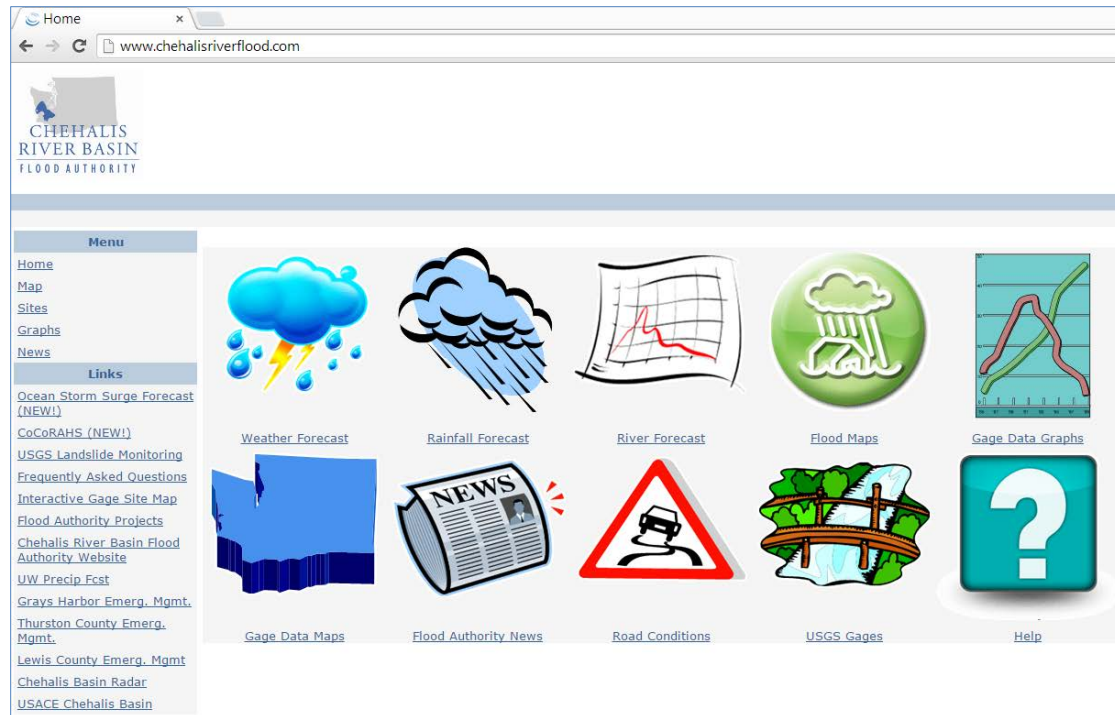
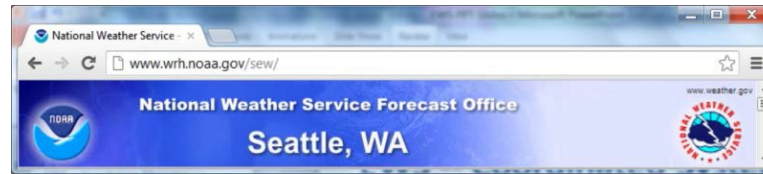
7. Early Flood Warning

- www.chehalisriverflood.com

- Front-facing website.

- Data collection, data synchronization.

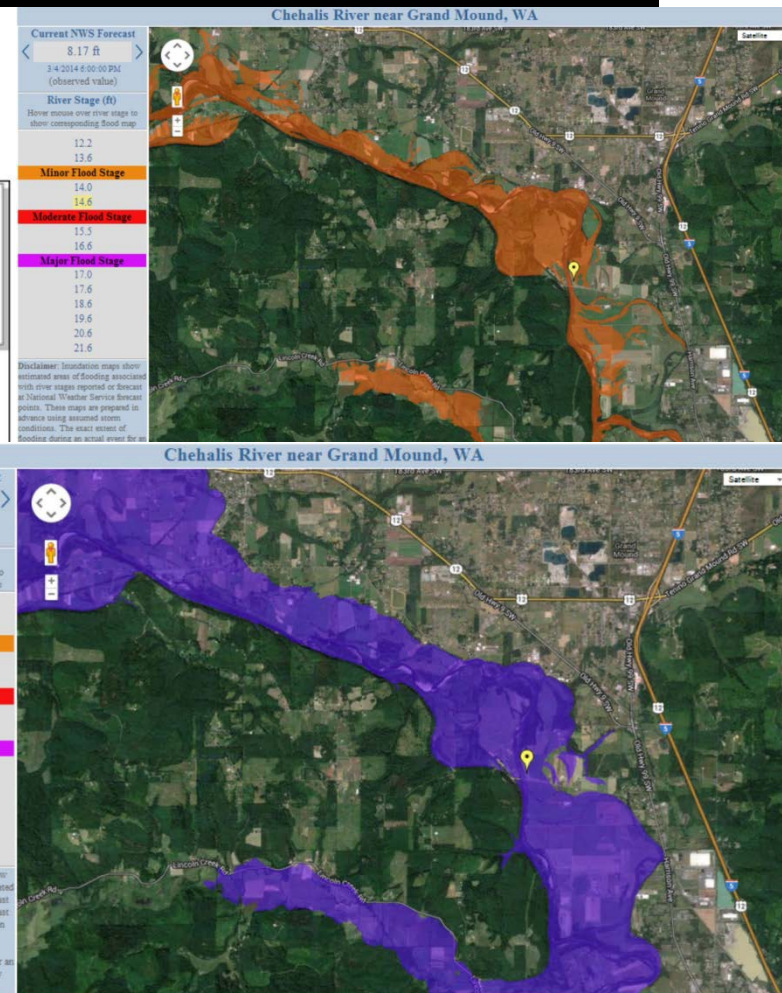
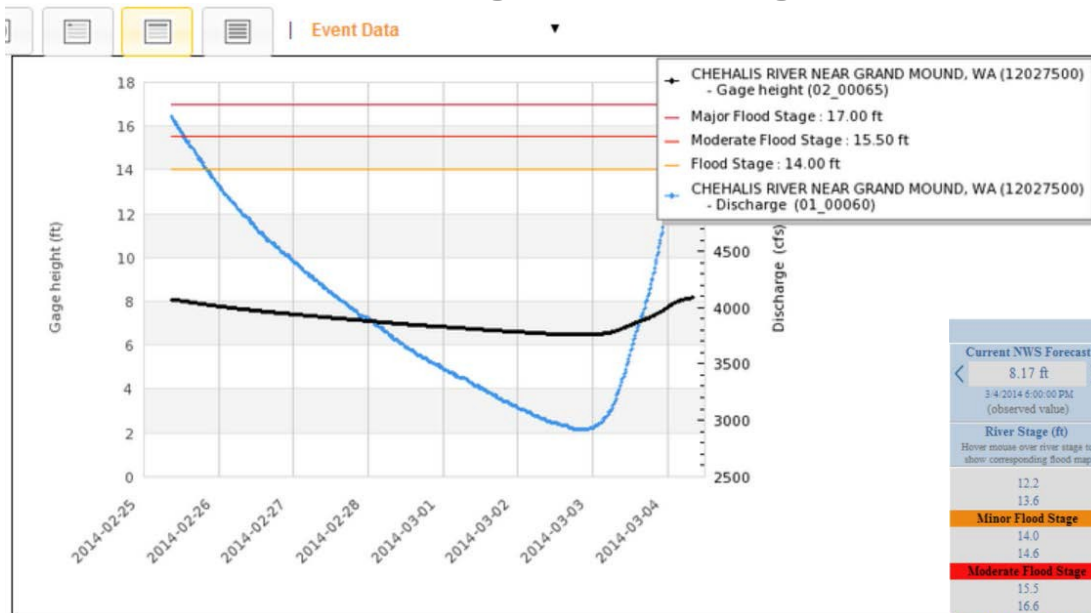
- Improved forecasting, early-warning.



June 2015

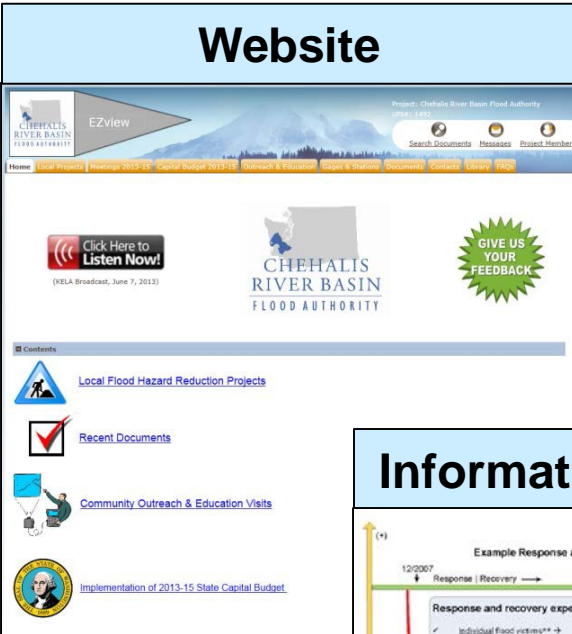
7. Early Flood Warning

■ Localized tracking, forecasting . . .

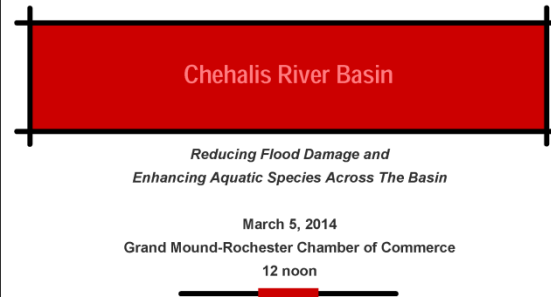


8. Outreach, Education and Communication

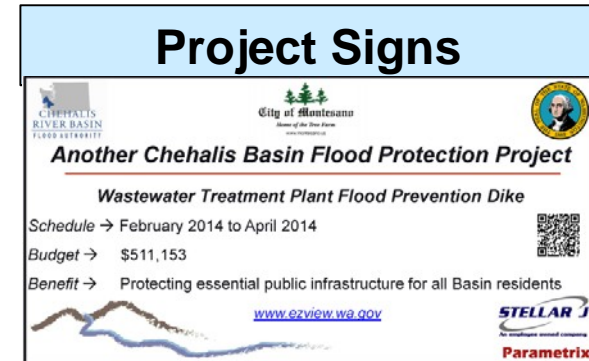
Website



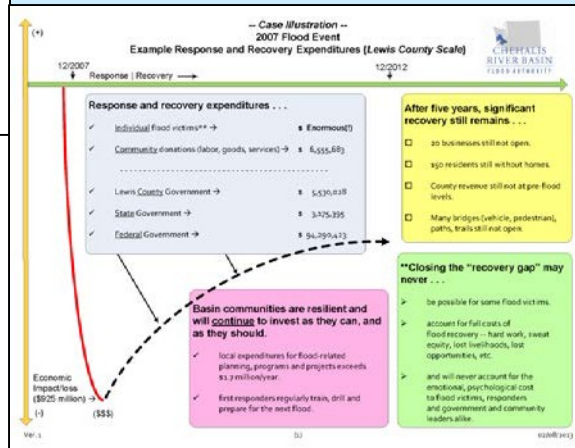
Outreach Visits



Project Signs



Informational Analyses

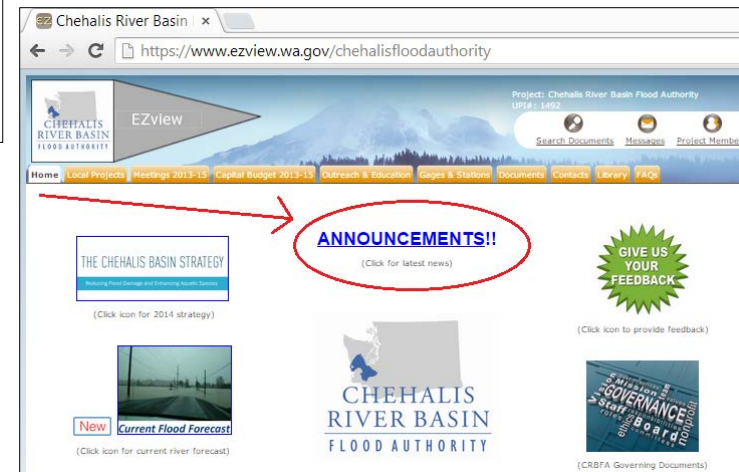
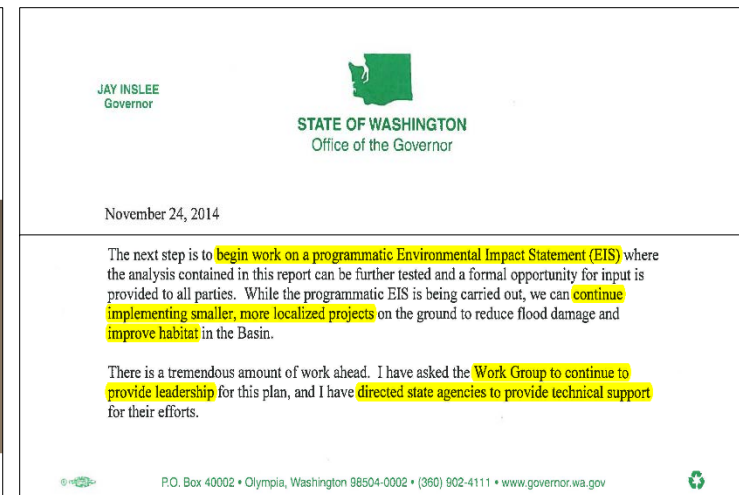
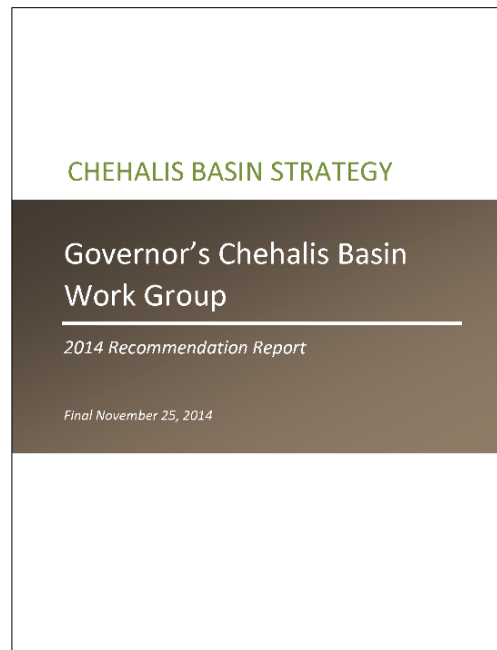


Email Distribution List

Pat Anderson

[Pat.Anderson@lewiscou
ntywa.gov](mailto:Pat.Anderson@lewiscountywa.gov)

Chehalis Basin Next Steps 2015-17



- Cost = \$500–600 million.
- Benefit = \$720 million (over next 100 years).
- No Action = \$3.5 billion (over next 100 years).



Chehalis Basin Next Steps 2015-17

Recommended Package of Actions:

1. Concrete flood retention dam on upper Chehalis River.
2. **Chehalis-Centralia Municipal Airport levee improvements.**
3. Basin-wide aquatic species restoration, including 100+ miles of spawning, rearing habitat.
4. **Smaller-scale flood-damage reduction projects, including raising homes, flood-proofing businesses and public structures.**
5. Local action to protect natural floodplain functions, ensure future development doesn't create more harm.

Recommended Next Steps (2015-17):

- a. **Initiate programmatic Environmental Impact Statement (EIS) to evaluate and further vet timing and cost of recommended package of flood-damage reduction and aquatic species restoration actions in preparation for permitting the individual components of the project.**
- b. Further investment in laying the technical groundwork for successful implementation of water retention and aquatic species restoration efforts.
- c. **Further investment in near-term, on-the-ground projects such as smaller-scale flood damage reduction, floodplain management, flood-proofing, flood warning and preparedness.**

Governor Inslee Proposed Budget -- 2015-17

leap.wa.gov/leap/default.asp

LEAP WASHINGTON STATE
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Enacted & Proposed Budgets

Enacted Budget Bills & Documents
Governor Inslee 2015 Budget Proposals **new**
Legislative Proposals

Office of Financial Management

20084850
Catastrophic Flood Relief
Provide funds to advance the long-term strategy for the Chehalis Basin projects to reduce flood damage, restore aquatic species and habitat and construct local priority flood protection projects.
Up to \$20,000,000 of the appropriation is for advancing the long-term strategy for Chehalis Basin projects to reduce flood damage and restore aquatic species, including a programmatic environmental impact statement, data collection, engineering design of future construction projects, feasibility analysis and engagement of state agencies, tribes and other parties.
Up to \$10,000,000 of the appropriation is for construction of local priority flood protection and habitat restoration projects.

<u>Prior Biennium</u>	<u>Current Biennium</u>	<u>Reappropriations</u>	<u>Appropriations</u>	<u>Future Cost</u>	<u>Total Cost</u>
9,232,000	14,583,000	13,773,000	30,000,000	120,000,000	187,588,000
Funds: State Building Construction Account - State					187,588,000

Resources, Additional Information . . .

www.ezview.wa.gov/chehalisfloodauthority

ANNOUNCEMENTS!!
(Click for latest news)

GIVE US YOUR FEEDBACK
(Click icon to provide feedback)

www.chehalisriverflood.com

<http://ruckelshauscenter.wsu.edu/ChehalisFlooding.html>

Chehalis Flooding

Upcoming Policy Workshop

The Chehalis Basin Strategy "Reducing Flood Damage and Enhancing Aquatic Species" Policy Workshop will be held on November 13, 2013 from 8:30am - 4:30pm at the Great Wolf Lodge in Centralia, WA. This workshop is open to the public. For more information, read the [agenda](#).

Project Description

The Chehalis Basin has repeatedly flooded over the past decades. There have been seven major floods in the past 30 years alone. The 2007 flood caused over \$900 million in private and public damages, as well as closed Interstate 5 and a major rail line for days. The 2010-11 Washington State Legislature passed Engrossed Substitute House Bill (ESHB) 2020, which required the Office of Financial Management (OFM) to produce a report for the Governor and Legislature that identifies recommended priority flood hazard mitigation projects in the Chehalis River Basin. The Center was asked by the Governor's Office to help OFM—in collaboration with the five state agencies, affected and interested federal agencies, 2 tribal governments, and 12 local governments—produce the report. The Center's tasks were to coordinate the report using technical information provided by other agencies and organizations, and to conduct a situation assessment of flood alternatives and relationships between the responsible parties and stakeholders. The report was completed in December 2012.

In August 2012, the Governor's Office asked the Center to facilitate a small work group convened by the Governor to inform the Governor's recommendations for the 2013-15 biennial budget. A framework document containing the group's consensus recommendations was presented to the Governor in November 2012. Then-Governor Gregoire endorsed the group's recommendations (as has current Governor Jay Inslee). In June 2013, the Legislature passed the 2013-15 biennial capital budget with \$28.2 million to fund the work group's recommendations. A summary of the budget for that work is located on right hand side of this page.

Governor Inslee requested the work group to continue to provide advice over the next two years to OFM on the implementation of these capital budget items. The Governor also requested work group provide

Documents and Resources

Read the [January 2014 Chehalis Basin Strategy](#) (2 MB PDF)

View the November 13 policy workshop [slide deck](#) (12 MB PDF)

Read the [Chehalis Basin Strategy Overview for 2013-2015](#) (437 KB PDF)

Read the [Chehalis River Basin Flood Damage Reduction 2013-2015 Capital Budget](#), approved by the Legislature in June 2013

Read the work group's [brief on the capital budget proposal](#) (279 KB PDF)

Read the [work group's framework](#) (70.7 KB PDF) or [summary of their recommendations](#) (42.5 KB PDF)

Read the [Alternatives Report](#) (11.5 MB PDF)

Read the [Executive Summary of the Alternatives Report](#) (2 MB PDF)

Read the [Comments on the Draft Report](#) as of 9-25-12 (1.6 MB PDF)

WSDOT Report: [I-5 Protection Flood Report](#) (7 MB PDF)

Closing – 2007 Flood Damage . . .

Chehalis
River near
Doty
USGS



Closing – 2007 Flood Damage . . .

**Clearing Mud in
Curtis, WA**
STEVE RINGMAN /
SEATTLE TIMES



June 2015

Closing – 2007 Flood Damage . . .



**Curtis, WA, Aftermath
of 7 Feet of Water**
STEVE RINGMAN /
SEATTLE TIMES

Closing – 2007 Flood Damage . . .



**Chandler Road Bridge
near Doty, WA**
STEVE RINGMAN /
SEATTLE TIMES

Closing – 2007 Flood Damage . . .



Closing – 2007 Flood Damage . . .



June 2015

Closing – 2007 Flood Damage . . .

I-5 Under Water
BRUCE ELY /
OREGONIAN



June 2015

Closing – 2007 Flood Damage . . .



Chehalis, WA
STEVE RINGMAN /
SEATTLE TIMES

Closing – 2007 Flood Damage . . .



June 2015

Closing – 2007 Flood Damage . . .



**Jackson Street,
Centralia, WA**
STEVE RINGMAN /
SEATTLE TIMES

Closing – 2007 Flood Damage . . .

I-5 Under Water
BRUCE ELY / OREGONIAN



June 2015

Closing – 2007 Flood Damage . . .



Photos Source:
WSDOT

June 2015

Closing – 2007 Flood Damage . . .



June 2015

Closing – 2007 Flood Damage . . .



Closing – 2007 Flood Damage . . .



**Wakefield Road,
Elma, WA**
GREG GILBERT /
SEATTLE TIMES

For Further Information . . .

Vickie Raines, *Chair*

Chehalis River Basin Flood Authority
(*Member*, Governor's Chehalis Basin Work Group)

360/249-3414

vraines@co.grays-harbor.wa.us

Edna Fund, *Vice-Chair*

Chehalis River Basin Flood Authority
(*Chair*, Outreach and Education Committee)

360/269-7515

Edna.Fund@lewiscountywa.gov

J. Vander Stoep, *Pe Ell Representative (Alternate)*

Chehalis River Basin Flood Authority
(*Member*, Governor's Chehalis Basin Work Group)

360/748-9281

jv@vanderstoep.com

Jim Kramer, *Facilitator*

Governor's Chehalis Basin Work Group,
and Chehalis River Basin Flood Authority

206/841-2145

jkramer.consulting@gmail.com

Scott Boettcher, *Staff*

Chehalis River Basin Flood Authority

360/480-6600

scottb@sbgh-partners.com



Thank You . . .

Thank You!

Note:

**This Presentation is Available at
“Chehalis River Basin Flood Authority” Website
at www.ezview.wa.gov/chehalisfloodauthority.**