

Chehalis River Basin Flood Authority

*Reducing Flood Damage and
Restoring Aquatic Species*

City of Chehalis
November 25, 2024

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

2 of 27



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



Today's Presentation

- “Flood Authority”

- #1 -- Local Projects

- #2 -- Flood Warning System

- “Chehalis River Basin Flood Control Zone District”

- #3 -- Proposed Flow-through Dam for Flood Control



**CHEHALIS
RIVER BASIN**
FLOOD CONTROL
ZONE DISTRICT



Office of
Chehalis Basin

Chehalis Basin
Board

<https://chehalisbasinstrategy.com/>

Chehalis River Basin Flood Authority

- **Formed** in 2008
- **Focused on** flood hazard mitigation
- **Decision-making**
 - ❑ informed by science
 - ❑ protective of Basin residents/communities
 - ❑ environmentally appropriate
- **Jurisdictions** represented (see [inter-local agreement](#))
 - Grays Harbor County (2008)
 - City of Aberdeen (2008)
 - City of Cosmopolis (2011)
 - City of Hoquiam (2017)
 - City of Montesano (2008)
 - City of Oakville (2008)
 - Lewis County (2008)
 - City of Centralia (2008)
 - City of Chehalis (2008)
 - City of Napavine (2011)
 - Town of Pe Ell (2008)



- Thurston County (2008)
 - Town of Bucoda (2008)

***Help local communities identify, develop, implement
local flood hazard reduction solutions.***

Local Projects (#1)

1. Reduce flood damage.
2. Protect people, property, infrastructure.
3. Improve readiness, response, resiliency.
 - *Drinking Water* (Boistfort, Bucoda).
 - *Wastewater* (Montesano, Pe Ell).
 - *Emergency Response* (Grays Harbor County, Chehalis-Centralia Airport).
 - *Regional Economic Infrastructure* (Montesano, Port of Chehalis, Port of Grays Harbor).
 - *Community Protection* (Aberdeen, Adna, Bucoda, Centralia, Chehalis, Chehalis Tribe, Hoquiam, Oakville).
 - *Flood Warning* (Basin-wide).

State Capital Budget:

2012-13 -- \$ 5.0M

2013-15 -- \$10.7M

2015-17 -- \$15.7M

2017-19 -- \$ 9.6M

2019-21 -- \$ 6.3M

2021-23 -- \$ 4.1M

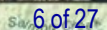
2023-25 -- \$ 3.6M

\$55.0M

2025-27 -- \$ 3.0M

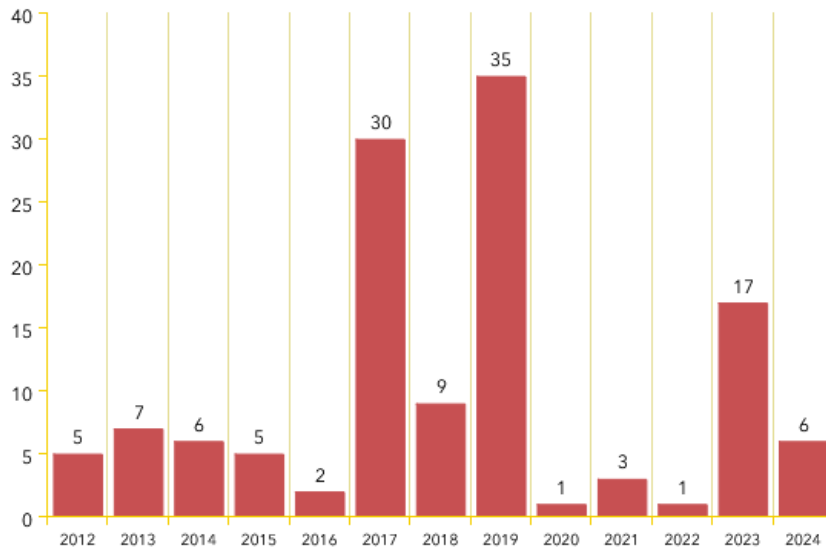
to

\$13.0M

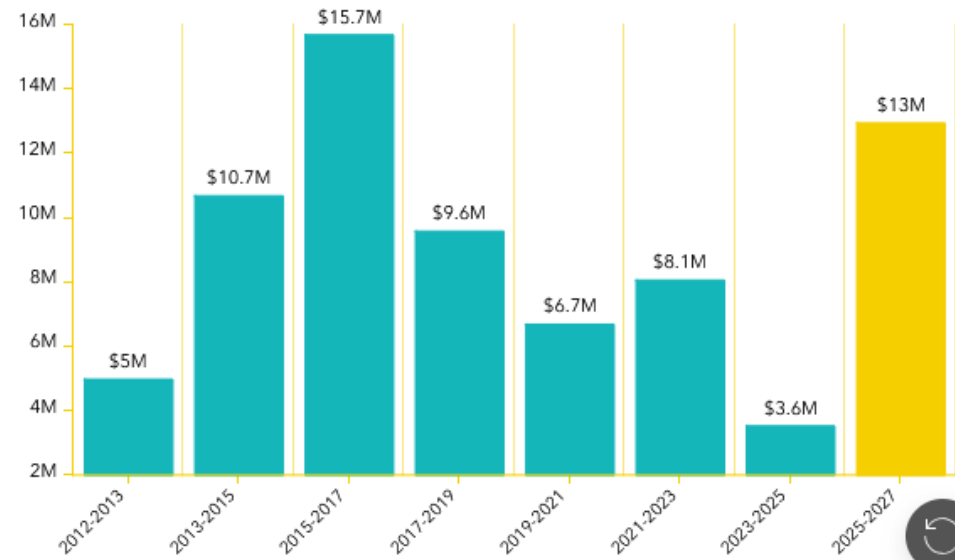
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Local Projects (100+ Projects Completed 2012-23)

Projects Completed by Year



Funding by Biennium (Two-Year Periods)



Local Projects (Cosmopolis, 2015-2018)

Mill Creek Multi-Objective Implementation Plan:

- ✓ Part I = Reconstruct Mill Creek Dam (done).
- ✓ Phase II project = Address 4,500' of Mill Creek flow, culverts, and flood water evacuation (under development).

Read 5-24-2024 news article [here](#)

Another Chehalis Basin Flood Protection Project

Mill Creek Dam Improvement Project

Schedule → October 2015 to July 2017

Budget → \$3,082,000

Benefit → Protecting and restoring essential Community flood control assets

www.ezview.wa.gov/chehalisfloodauthority



City of Cosmopolis, Sep 29, 2018

 **The Daily World**



AGAIN, Voted **BEST BANK** & BEST PLACE TO GET A LOAN *Thanks!*
It's You that makes us better.

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NEWS

New Mill Creek Dam ribbon cutting Saturday in Cosmopolis

September 28, 2018 7:00 pm



FILE PHOTO Cosmopolis Mayor Frank Chestnut (left) will officiate a ribbon cutting ceremony for the new Mill Creek Dam Saturday at noon.

<https://www.thedailyworld.com/news/new-mill-creek-dam-ribbon-cutting-saturday-in-cosmopolis/>

Local Projects (Pe Ell, 2014)



- ✓ Project = Design/construct 900' dike (between Chehalis r. and WWTP).
- ✓ Cost = \$521,000.
- ✓ Photos = https://www.ezview.wa.gov/site/alias_1492/35040/default.aspx#peell.
- ✓ Website = https://www.ezview.wa.gov/site/alias_1782/34858/overview.aspx

Local Projects (Montesano, 2017-2020)

- ✓ Protect WWTP from on-coming Wynoochee river using 220+ “log-jacks.”
- ✓ \$2 million (for “log-jacks”).
- ✓ Small cost compared to WWTP relocation and environmental cleanup (in event of WWTP breaching).

Project End



<https://www.google.com/maps/@46.9678637,-123.6077821,197m/data=!3m1!1e3>



Project Start



Governor Inslee and Mayor Samuel stand overlooking the Wynoochee River.

July 7, 2022 →

Local Projects (Bucoda, 2016)

ELEVATION CERTIFICATE
U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

OMB No. 1560-0008
Expiration Date: July 31, 2015

SECTION A - PROPERTY INFORMATION

A1. Building Owner's Name: **Colleen M. Tee**

A2. Building Name: **Bucoda Christian Assembly**

A3. City: **Bucoda** State: **WA**

A4. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.):
Tax Parcel No. **6180030050**

A5. Building use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): **Residential**

A6. Address (Street, Apt. No., Suite, and/or Bldg. No.) or R.F. Route and Box No.: **3501 N. Market Street**

A7. Building Diagram Number: **88530**

A8. For a building with a crawlspace or enclosure:
a) Square footage of crawlspace or enclosure: **550** sq ft
b) No. of permanent flood openings in the crawlspace or enclosure within 1.0 foot above adjacent grade: **4**
c) Total net area of flood openings in A8.b: **312** sq in
d) Engineered flood openings? ☒ Yes ☐ No

A9. For a building with an attached garage:
a) Square footage of attached garage: **50** sq ft
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade: **0**
c) Total net area of flood openings in A9.b: **0** sq in
d) Engineered flood openings? ☐ Yes ☒ No

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. FIRM Community Name and Community Number: **BUCODA, WA 330100**

B2. Date of Flood Insurance Rate Map: **10/16/2012**

B3. FIRM Panel Effective Date: **10/16/2012**

B4. Map/Panel Number: **5307C0486**

B5. Zone: **E**

B6. FIRM Index Date: **09/02/1981**

B7. FIRM Panel Effective Date: **10/16/2012**

B8. Flood Zone(s): **AE**

B9. Base Flood Elevation(s) (Zone AE only): **255.0'**

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in item B9:
☒ FIRM ☐ Other Source: **NOV 1929**

B11. Indicate elevation datum used for BFE in item B9:
☒ NGVD 1929 ☐ NAVD 1988 ☐ Other Source: **NO**

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)?
☐ Yes ☒ No

Designation Date: **09/02/1981**

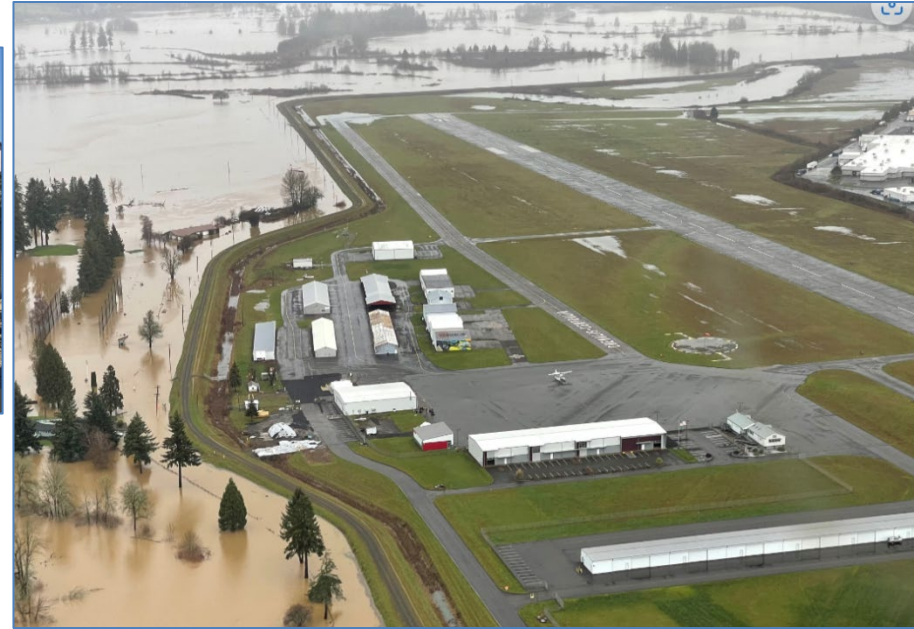
SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on:
☐ Construction Drawings ☐ Building Under Construction ☒ Personal Construction

A Note: Elevation Certificate will be required when construction of the building is complete.

C2. Elevations - Zones AE, AH, AL, A1, A2, A3, A4, A5, A6, A7, A8, A9, AR, AR1, AR2, AR3, AR4, AR5, AR6, AR7, AR8, AR9, AR10, AR11, AR12, AR13, AR14, AR15, AR16, AR17, AR18, AR19, AR20, AR21, AR22, AR23, AR24, AR25, AR26, AR27, AR28, AR29, AR30, AR31, AR32, AR33, AR34, AR35, AR36, AR37, AR38, AR39, AR40, AR41, AR42, AR43, AR44, AR45, AR46, AR47, AR48, AR49, AR50, AR51, AR52, AR53, AR54, AR55, AR56, AR57, AR58, AR59, AR60, AR61, AR62, AR63, AR64, AR65, AR66, AR67, AR68, AR69, AR70, AR71, AR72, AR73, AR74, AR75, AR76, AR77, AR78, AR79, AR80, AR81, AR82, AR83, AR84, AR85, AR86, AR87, AR88, AR89, AR90, AR91, AR92, AR93, AR94, AR95, AR96, AR97, AR98, AR99, AR100, AR101, AR102, AR103, AR104, AR105, AR106, AR107, AR108, AR109, AR110, AR111, AR112, AR113, AR114, AR115, AR116, AR117, AR118, AR119, AR120, AR121, AR122, AR123, AR124, AR125, AR126, AR127, AR128, AR129, AR130, AR131, AR132, AR133, AR134, AR135, AR136, AR137, AR138, AR139, AR140, AR141, AR142, AR143, AR144, AR145, AR146, AR147, AR148, 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Local Projects (Chehalis-Centralia Airport, 2017)



- ✓ Completed -- Fall 2017.
- ✓ Cost -- \$1.14M.
- ✓ January 2022 Flood Event – Pumped 518.4M gallons over many days to keep levee dry.
- ✓ ROI (2018) -- Protects \$45M in assets, ensures \$9M in annual tax revenue.
- ✓ Read More -- [Here](#).

NEW! -- 10th Street Stormwater Pump Station

Local Projects (Hoquiam, 2025)

PUMP STATION FENCING WITH PRIVACY SLATS



PUMP STATION FENCING AND DISCHARGE PIPES INSTALLED



PROPELLER PUMP MOTORS INSTALLED

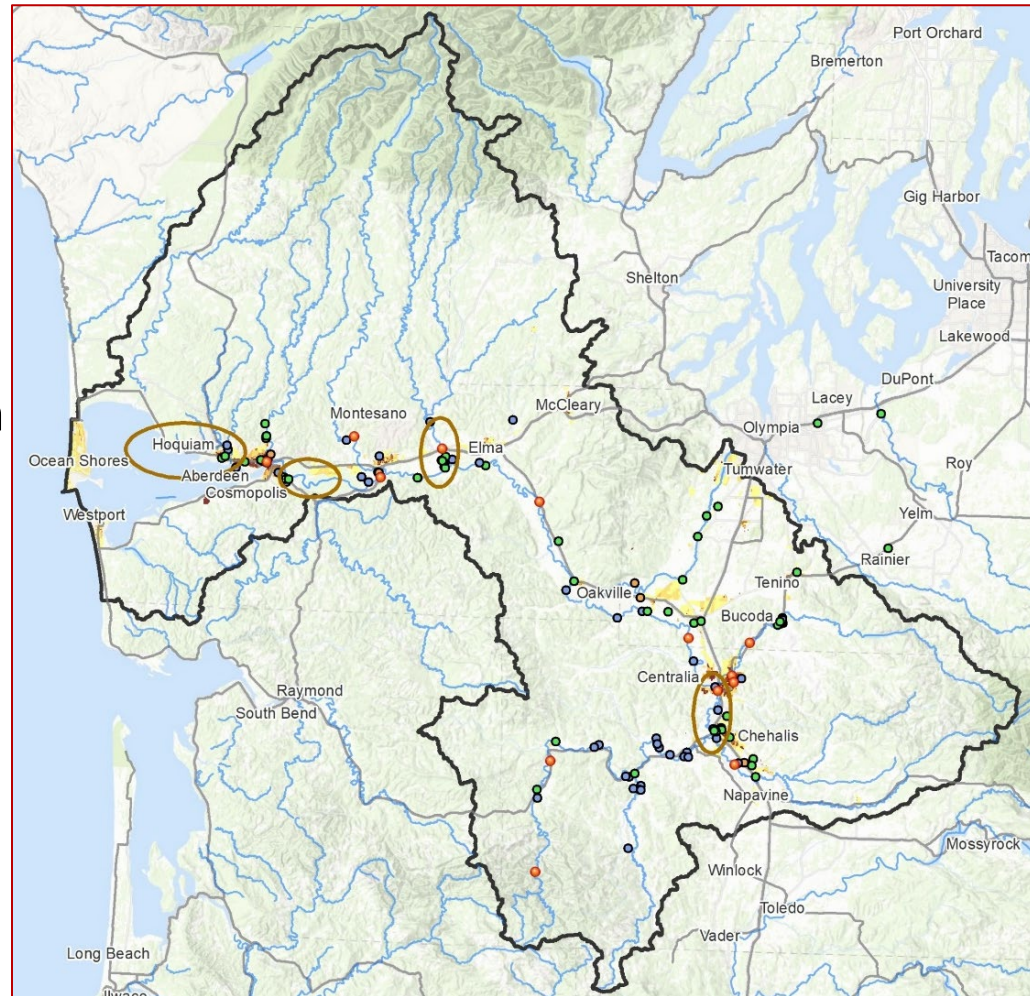


PUMPS AND DISCHARGE PIPE FLEX COUPLERS



Local Projects (Geographically-Based)

Identify future local projects through geographically-based, coordinated local investment planning.



- ✓ **\$50M need.**
- ✓ \$30M to date (58%).
- ✓ \$12M request (24%).

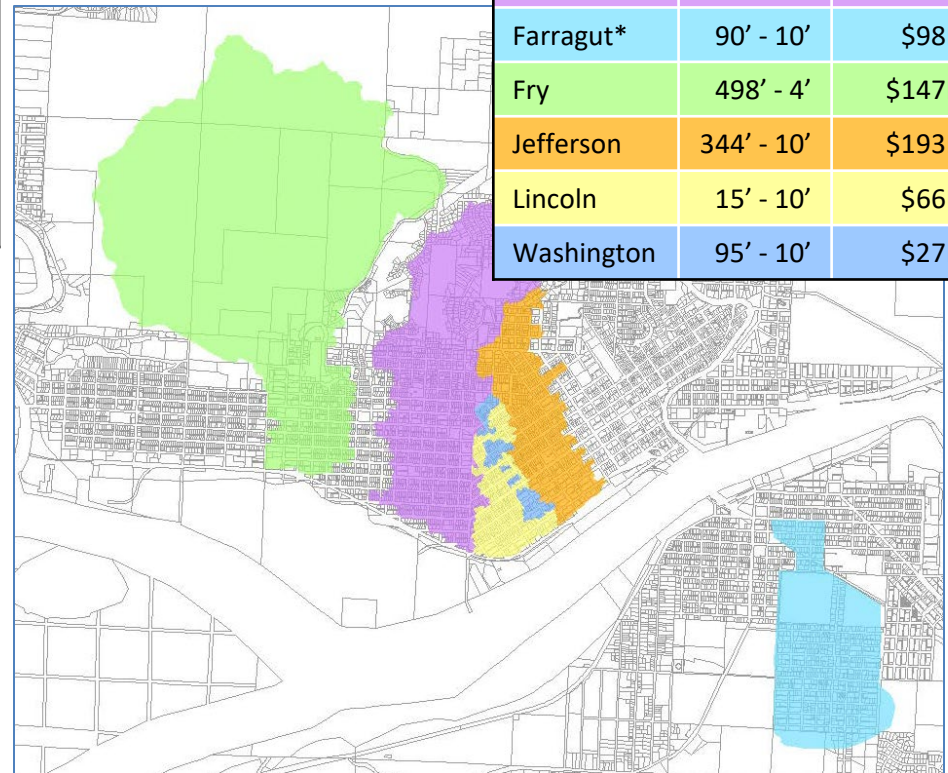
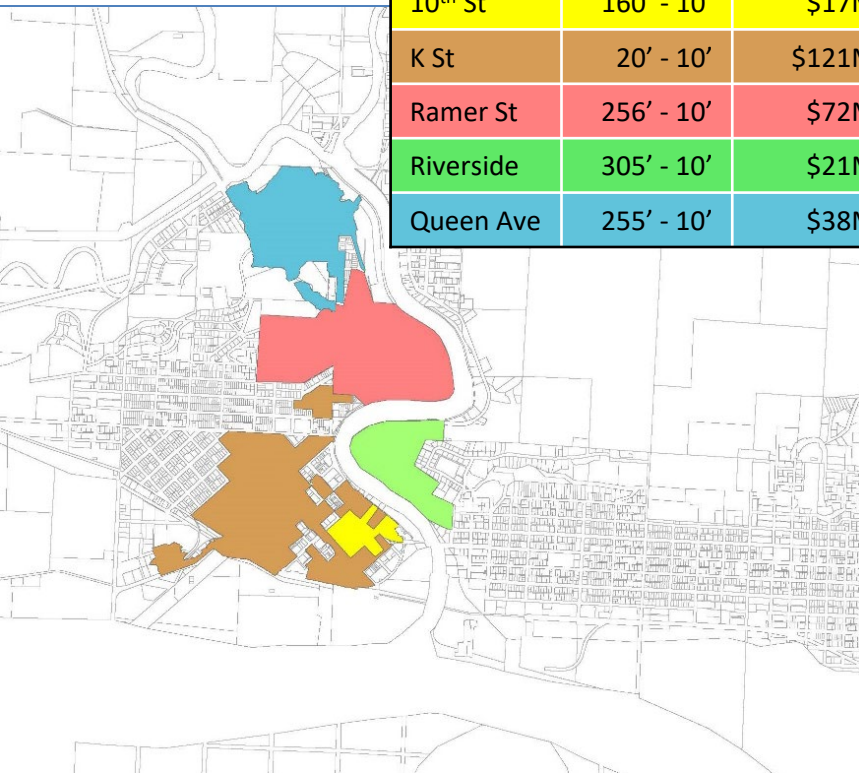
- 2,735 acres
- 4,583 parcels
- 232 businesses
- **\$1.1B assessed value**

- ✓ Drivers and Solutions ([here](#)).
- ✓ Joint Resolution ([here](#)).
- ✓ Joint Plan ([here](#)).

Local Projects (Pumps -- Geographically-Based)

Sub-Basin	Elevation	Assessed
10 th St	160' - 10'	\$17M
K St	20' - 10'	\$121M
Ramer St	256' - 10'	\$72M
Riverside	305' - 10'	\$21M
Queen Ave	255' - 10'	\$38M

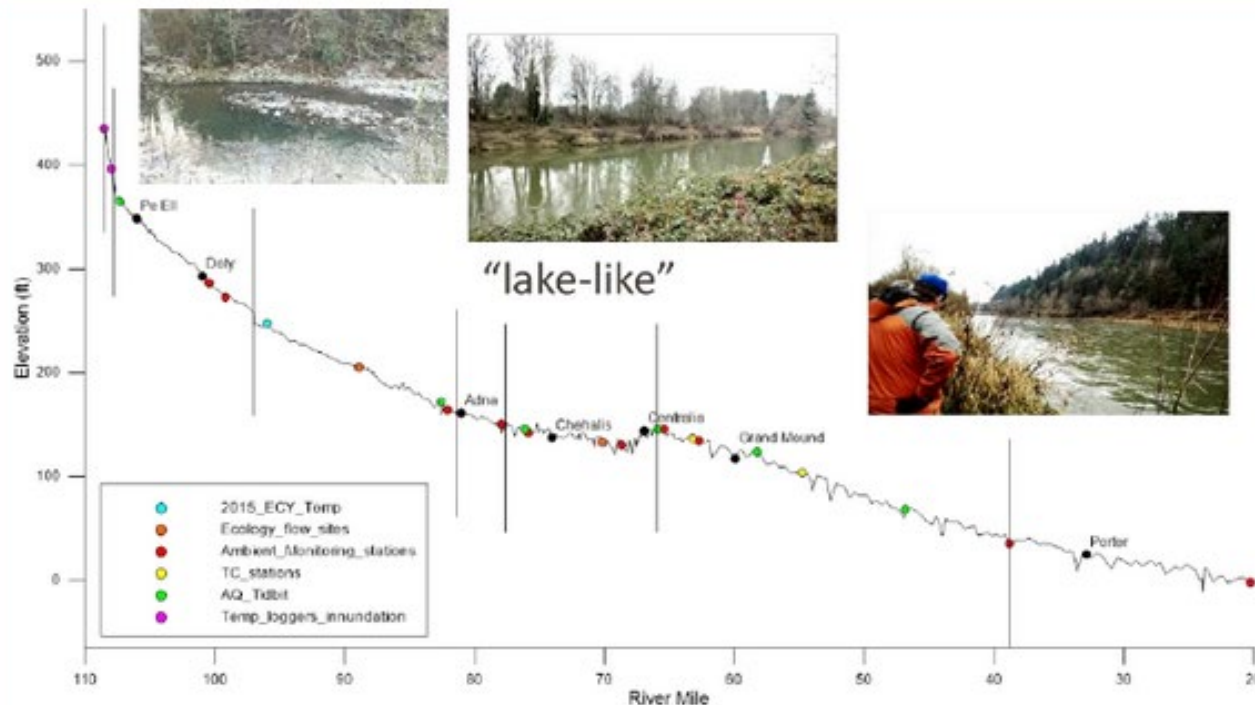
Sub-Basin	Elevation	Assessed
Division	345' - 10'	\$300M
Farragut*	90' - 10'	\$98M
Fry	498' - 4'	\$147M
Jefferson	344' - 10'	\$193M
Lincoln	15' - 10'	\$66M
Washington	95' - 10'	\$27M



11 urbanized low elevation sub-basins + Adverse meteorologic conditions -- high tides, heavy rain, bankfull rivers, saturated soils, SW winds

= **Very difficult to drain!**
(\$1.1B assessed value at risk)

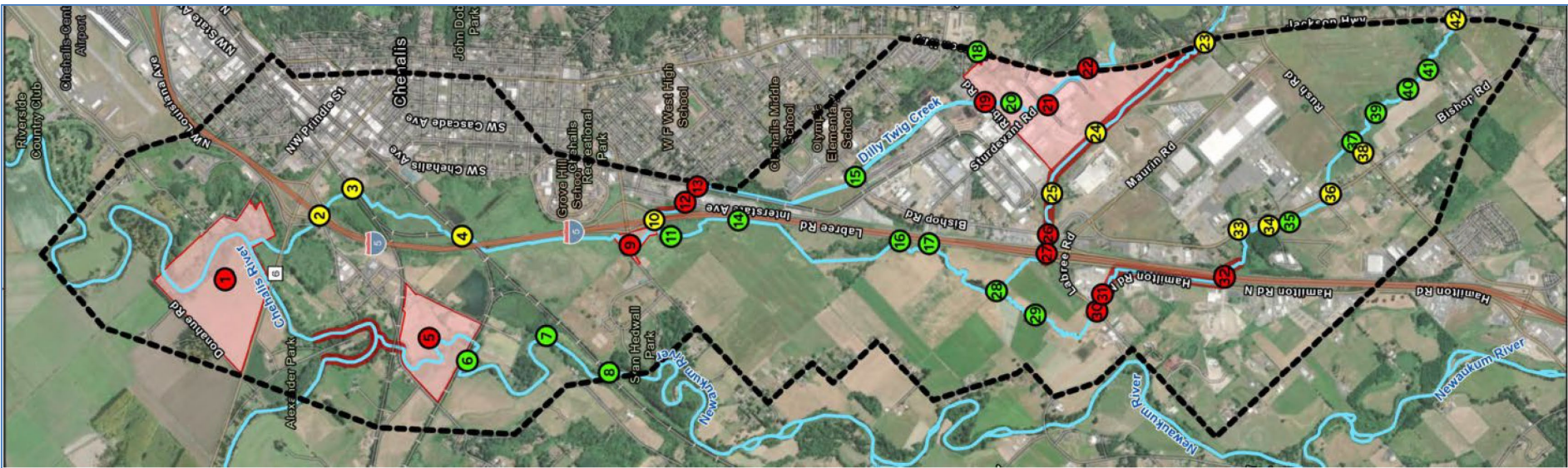
Local Projects (Geographically-Based)



Basin Geography

- ☐ Upper = Steep, narrow, fast flowing.
- ☒ Middle = Flat, “lake like”, slow to drain.
- ☐ Lower = Flat, coastal, difficult to drain.

Shah, Mohammad. (2021). inland water-dynamics and ecology. [10.5772/intechopen.87463](https://doi.org/10.5772/intechopen.87463).



- ✓ Increase flood storage
- ✓ Reduce flood levels
- ✓ Minimize damage, mo

Feb 6th or Mar 6th = Community workshop
(VL Community Building, 2-6 PM)

2023-25 Funding – Old WWTP Demolition Project

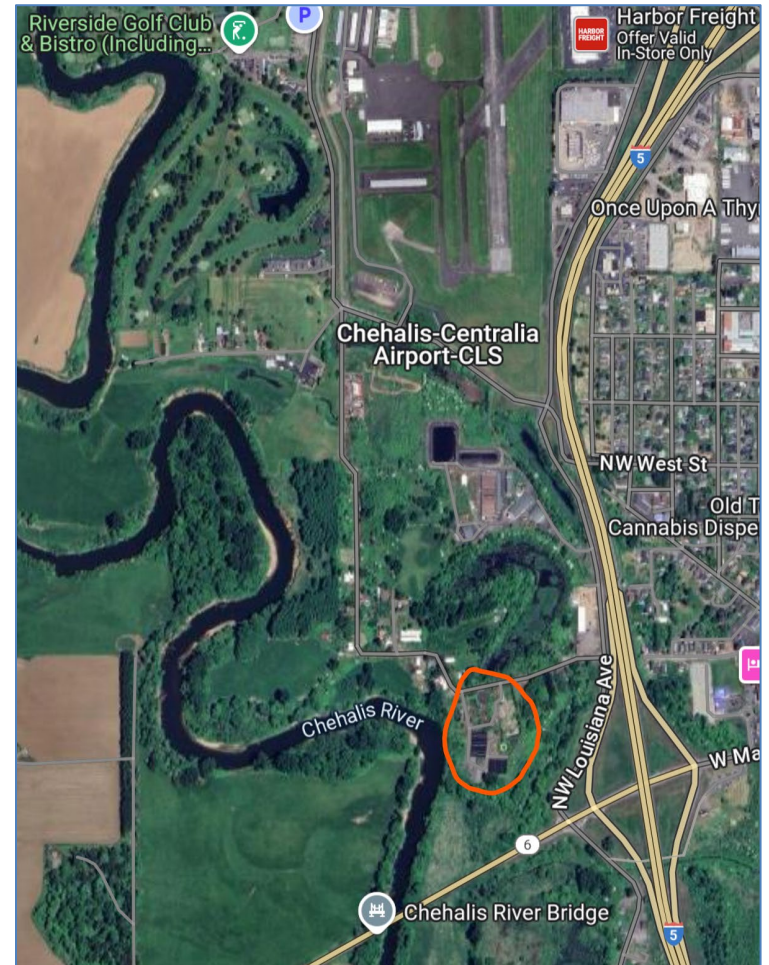
Local Projects (Mid-Basin -- Geographically-Based)

2023-25 Funding = \$100,000

✓ Preliminary design, permit scoping.

2025-27 Funding = \$200,000

✓ Final design, permitting.



Flood Warning System (#2)

- ✓ **Developed** with State Capital Budget \$.
- ✓ **Maintained** with local \$.


www.chehalisriverflood.com

https://chehalis.rain.com 67%

The Chehalis River Basin Flood Warning System
Be Aware, Be Prepared: Flood Season is here!

Sign Up Now to receive 2023-24 email high water alerts - The Chehalis Basin Flood Warning System sends automatic email alerts about rising floodwaters.

To sign up for email alerts, click the icon below:





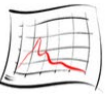

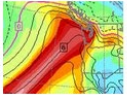




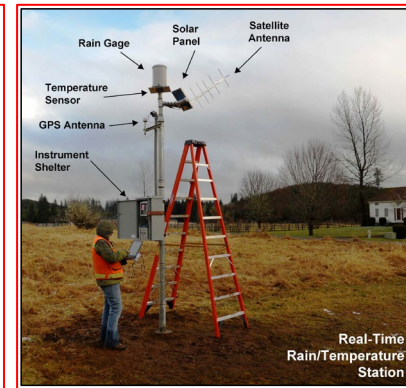
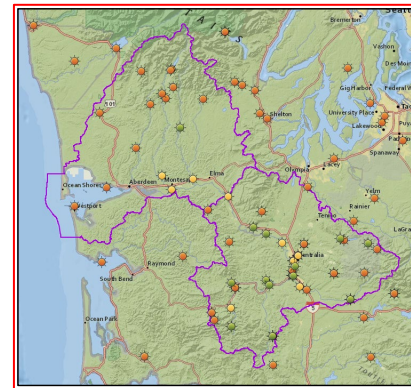
Questions?
Contact Cheryl Vincent at cvincent@westconsultants.com and Jennifer McAdoo at jennifer.mcadoo@icf.com.

Para leer esta información en español, haga clic aquí

Click here on the image above to visit our Interactive ArcGIS Dashboard!

Chehalis River Basin Forecasting Tools

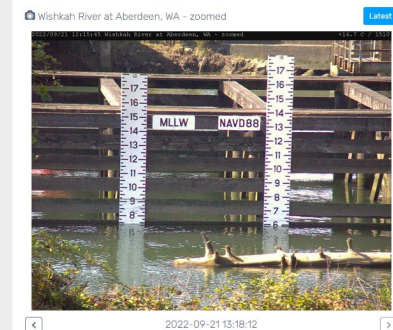
 Chehalis River (and tributaries) Dashboard	 Weather Forecast	 Rainfall Forecast	 Radar Rainfall	 River Forecast	 Flood Maps
 Atmospheric Rivers	 King Tides Calendar	 Seasonal Precipitation and Temperature Forecasts			



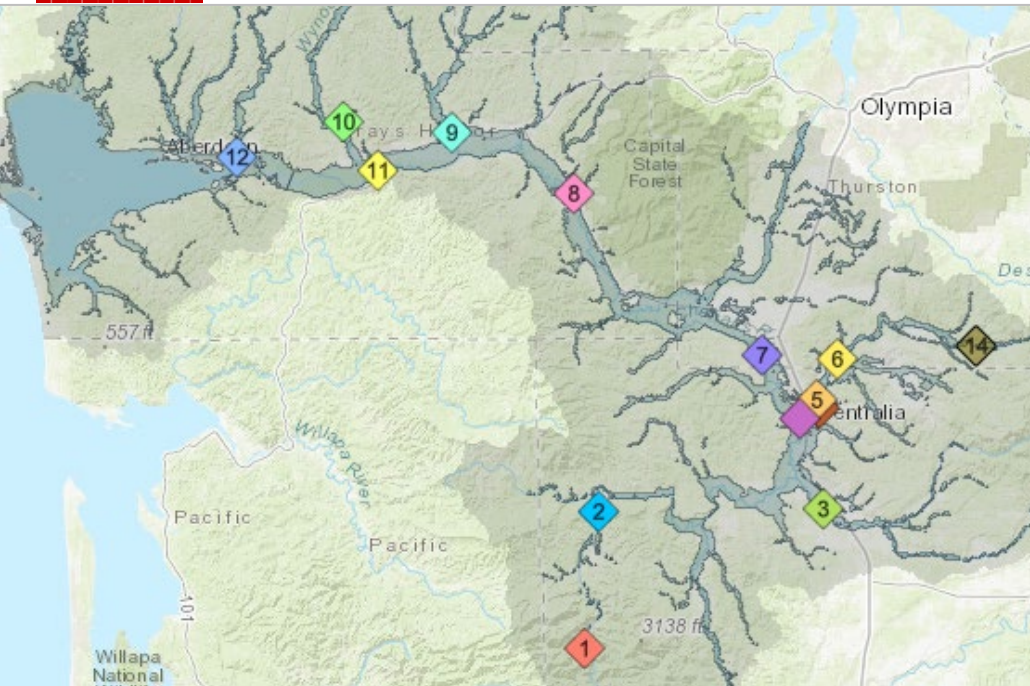
Looking at downstream face of Heron St. bridge



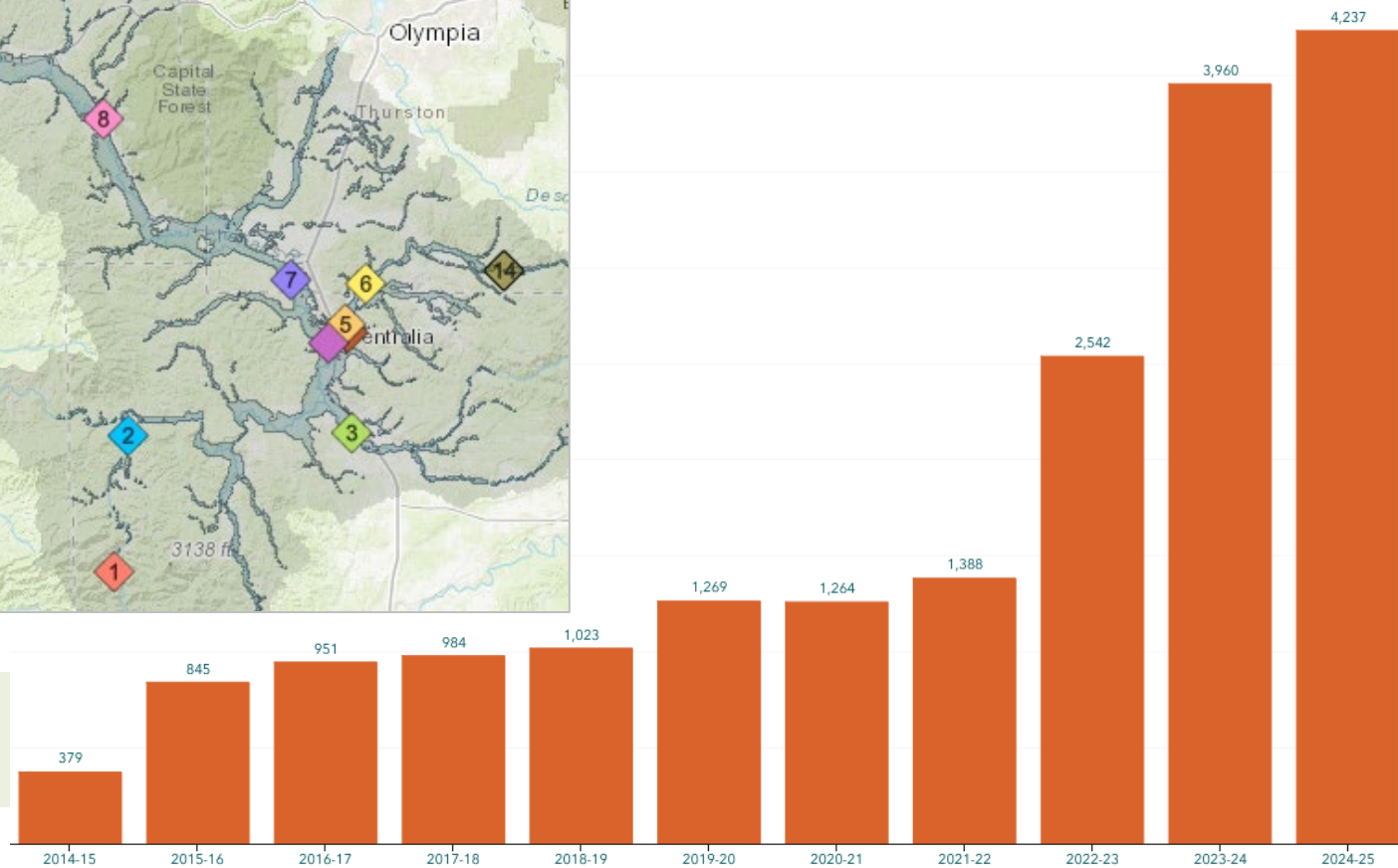
Looking at Wishkah River staff gage



Flood Warning System (Alert Sign-Ups)



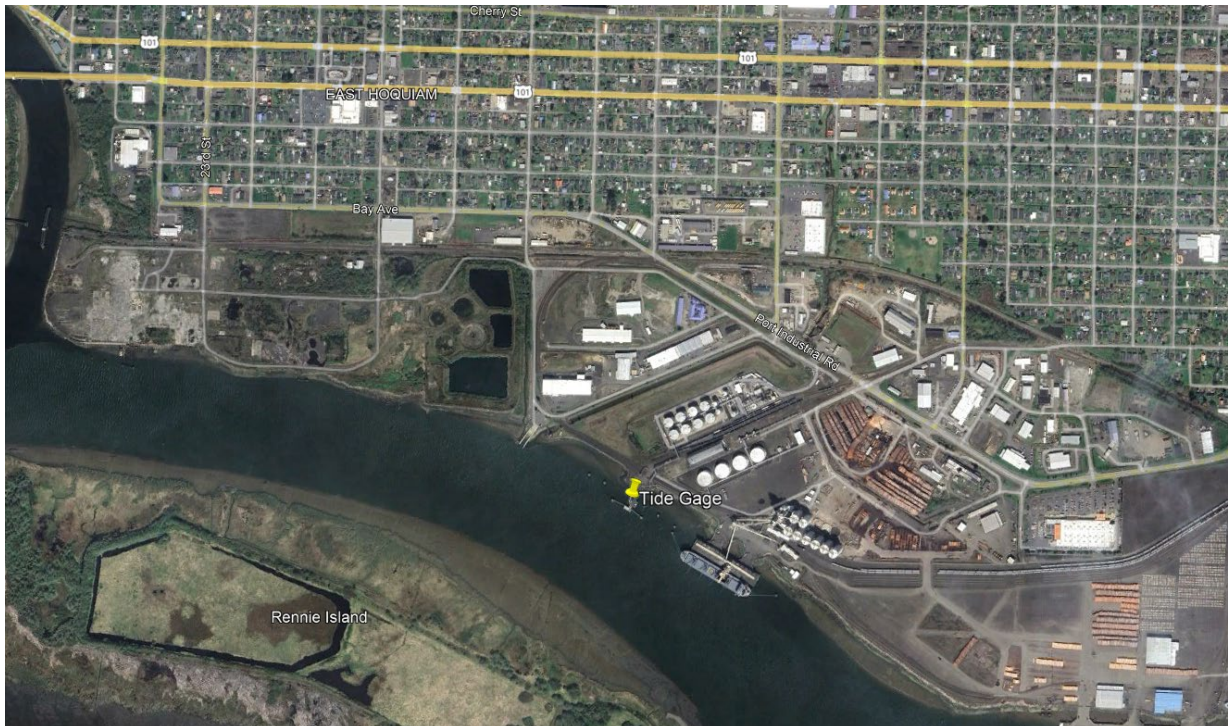
Sign-up for email high water alerts [here](#).



Flood Warning System (New Tide Gage)

Chehalis Basin Board provided funding for new Tide gage.

- ✓ Working with NWS on lower Chehalis river forecast.
- ✓ Data could help Aberdeen/Hoquiam manage North Shore Levee.



Proposed Flow-through Dam for Flood Control (#3)

ABOUT THE DISTRICT

The Chehalis River Basin Flood Control Zone District works to make the basin a safer place for communities impacted by flooding. The District's goals are to:



Reduce the risk associated with flooding and preserve life



Prevent damage to property



Protect, preserve, and conserve natural resources

The District is proposing a flow-through dam for flood control as a flood risk solution that serves the needs of fish, preserves the riverine ecosystem, and protects communities.



Event Calendar

**CHEHALIS
RIVER BASIN
FLOOD CONTROL
ZONE DISTRICT**

www.chehalisriverbasinfczd.com

Upcoming Events



OCTOBER 10

**Chehalis River Basin
FCZD Advisory
Committee meeting**

**Oct 10, 2024, 8:00 AM –
9:00 AM**

Commissioners' Hearing
Room 351 NW North St.
Chehalis, WA 98532



OCTOBER 15

**Chehalis River Basin
FCZD Supervisor
meeting**

**Oct 15, 2024, 11:00 AM –
12:00 PM**

Commissioners' Hearing
Room 351 NW North St.
Chehalis, WA 98532



NOVEMBER 14

**Chehalis River Basin
FCZD Advisory
Committee meeting**

**Nov 14, 2024, 8:00 AM –
9:00 AM**

Commissioners' Hearing
Room 351 NW North St.
Chehalis, WA 98532

Proposed Flow-Through Dam for Flood Control (#3)

1. Move through unobstructed
 - ✓ Water
 - ✓ Fish
 - ✓ Sediment
2. Delivers top-to-bottom benefit, Pe Ell to Cosmopolis.
3. See recent presentation [here](#).



Chehalis Basin Strategy

State Law

“The primary purpose of the office is to aggressively pursue implementation of an integrated strategy and administer funding for long-term flood damage reduction and aquatic species restoration in the Chehalis river basin.” ([RCW 43.21A.730](#))



Office of Chehalis
Basin

Chehalis Basin
Board

<https://chehalisbasinstrategy.com/>

appoints 3
member



Chehalis Basin Board

Community leaders, Chehalis and
Quinault tribal representatives,
local and state government liaisons

Office of Chehalis Basin

Small team within the WA
Department of Ecology

“Network of Partners”

Organizations and local
entities who turn ideas into
shovel-ready reality

Chehalis Basin Strategy (Network of Partners)



Today vs 2007

Today, we are substantially more aware, better prepared for catastrophic flooding than ever before.

- ✓ We have a state-of-the art flood warning system.
- ✓ We've completed many cost-efficient local projects and habitat projects.
- ✓ We're serving people, local governments, emergency responders, agriculture, fish, and habitat alike
- ✓ We have a governance, administrative, and funding structure that's delivering results, and is committed to a balanced basin-wide flood and fish solution (see Local Resolution Library).



<https://chehalisbasinstrategy.com/office-of-chehalis-basin/>

Key Contacts

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Chair, Chehalis Basin Board

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Edna Fund, *Lewis County Representative*

Vice-Chair, Chehalis River Basin Flood Authority

Chair, Chehalis River Basin Flood Control Zone District Advisory Board

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Member, Chehalis River Basin Flood Authority

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Scott Boettcher

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Extra – Flood and Fish Articles

The Chronicle

Division of CP Publishing

<https://chronline.com/browse.html?>

Chehalis Basin Strategy progress in review: Pump station investments to protect 5,100 properties in lower Chehalis River Basin
Editor's Note: This article is part of an ongoing series highlighting projects that have been completed as part of the Chehalis Basin Strategy. These projects are implemented in cooperation ... more
By The Chronicle staff | 11/18/24

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Editor's Note: This article is part of an ongoing series highlighting projects that have been completed as part of the Chehalis Basin Strategy. These projects are implemented in cooperation ... more
By The Chronicle staff | 8/23/24

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More than 140 local fish and flood projects have been completed across the Chehalis River Basin, coordinated and funded through the Office of Chehalis Basin (OCB). The OCB board is ... more
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Chehalis Basin Strategy progress in review: Pump station paves way for economic revitalization, flood protection in Grays Harbor County
More than 140 local fish and flood projects have been completed across the Chehalis River Basin, coordinated and funded through the Office of Chehalis Basin (OCB). The OCB board is ... more
By The Chronicle staff | 8/15/23

Chehalis Basin Strategy progress in review: Log jacks protect wastewater treatment plant in Grays Harbor County
More than 140 local fish and flood projects have been completed across the Chehalis River Basin, coordinated and funded through the Office of Chehalis Basin (OCB). The OCB board is ... more
By The Chronicle staff | 8/25/23

Chehalis Basin Strategy progress in review: Chehalis-Centralia Airport pump station replacement
It has been more than 15 years since the devastating flooding of December 2007 in the Chehalis River Basin. In the time since, residents, businesses, tribes and government entities ... more
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The Chronicle

<https://www.chronline.com/stories/chehalis-basin-strategy-progress-in-review-pump-station-investm>

Chehalis Basin Strategy progress in review: Pump station investments to protect 5,100 properties in lower Chehalis River Basin



The Fry Creek Pump Station is pictured in Aberdeen.