



Be Aware, Be Prepared: Chehalis River Basin Flood Warning System

November 3, 2022

Scott Boettcher, Staff,
Chehalis River Basin Flood Authority



TODAY

1. What is the Chehalis River Basin Flood Warning System?
2. What do users say?
3. How can you help?
4. Any questions?

1. WHAT IS THE CHEHALIS RIVER BASIN FLOOD WARNING SYSTEM?

WWW.CHEHALISRIVERFLOOD.COM

The screenshot shows the homepage of the Chehalis River Basin Flood Authority website. At the top left is the logo for the Chehalis River Basin Flood Authority, featuring a map of the basin. To the right of the logo is a user profile icon. Below the logo is a navigation menu with links for Home, Map, Sites, News, and Dashboards. The main content area features a large banner image of a river valley with mountains in the background. Below the banner are three dropdown menus labeled 'Rainfall Summary', 'River Summary', and 'Additional Resources'. Underneath these are two rows of icons representing various services: Weather Forecast, Rainfall Forecast, River Forecast, Flood Maps, Plot Gage Data, Gage Data Maps, Landslide, Radar Rainfall, Road Conditions, USGS Gages, Atmospheric Rivers, and Chehalis Basin Gage Height Conversion Project. At the bottom left of the page, there is a 'Photo Credit:' label.

CHEHALIS RIVER BASIN FLOOD AUTHORITY

Home Map Sites News Dashboards

Rainfall Summary Rainfall Summary Rainfall Summary

Weather Forecast Rainfall Forecast River Forecast Flood Maps Plot Gage Data Gage Data Maps

Landslide Radar Rainfall Road Conditions USGS Gages Atmospheric Rivers Chehalis Basin Gage Height Conversion Project

Photo Credit:

CATASTROPHIC AND MAJOR FLOODING

2007
2009
2022



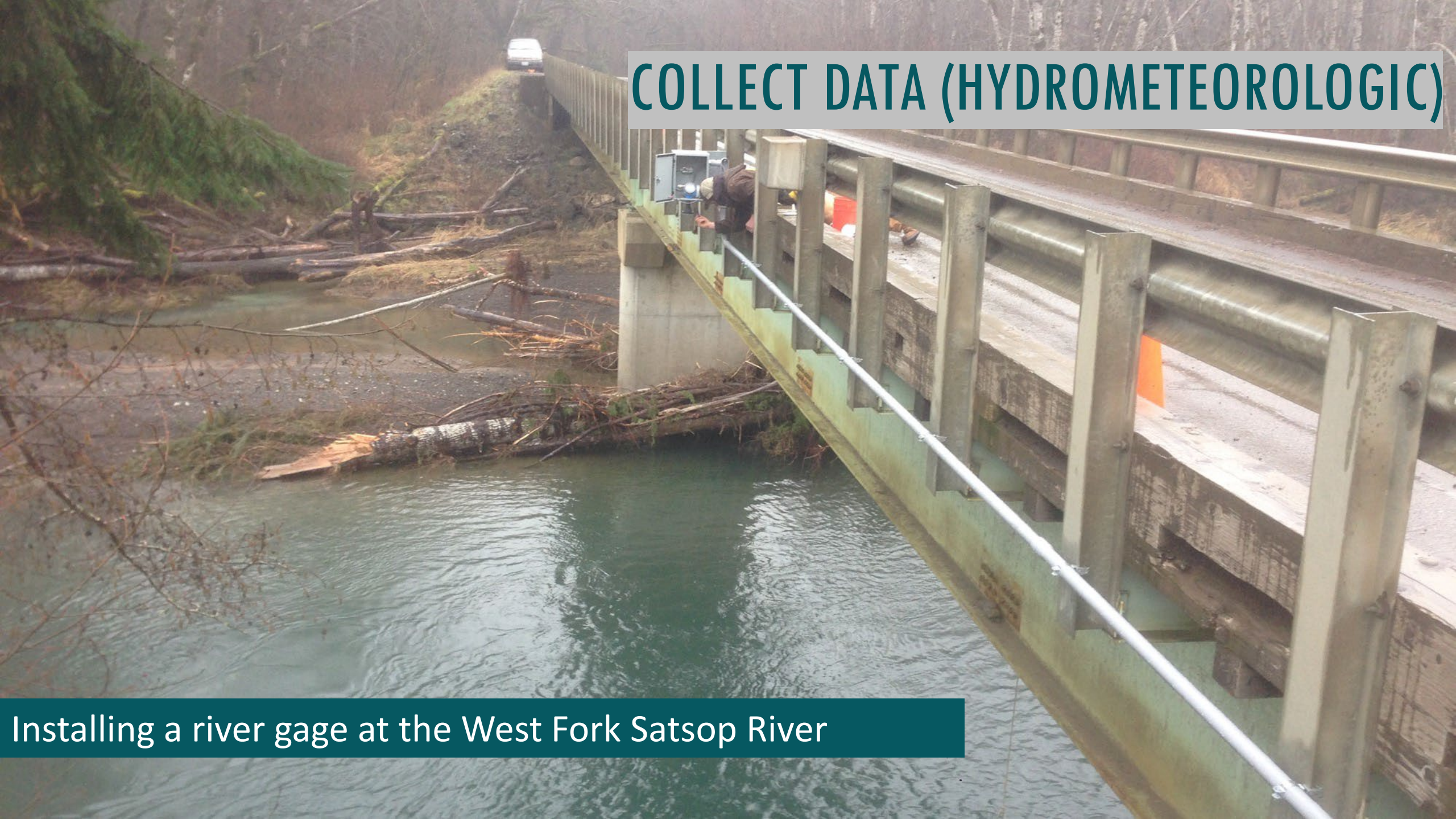
COLLECT DATA (HYDROMETEOROLOGIC)



- 2010
 - 10 new Flood Authority sites
 - 8 rain & temperature
 - 2 rain, temperature, & streams
- Today
 - 300 sensors
 - 100 sites overall

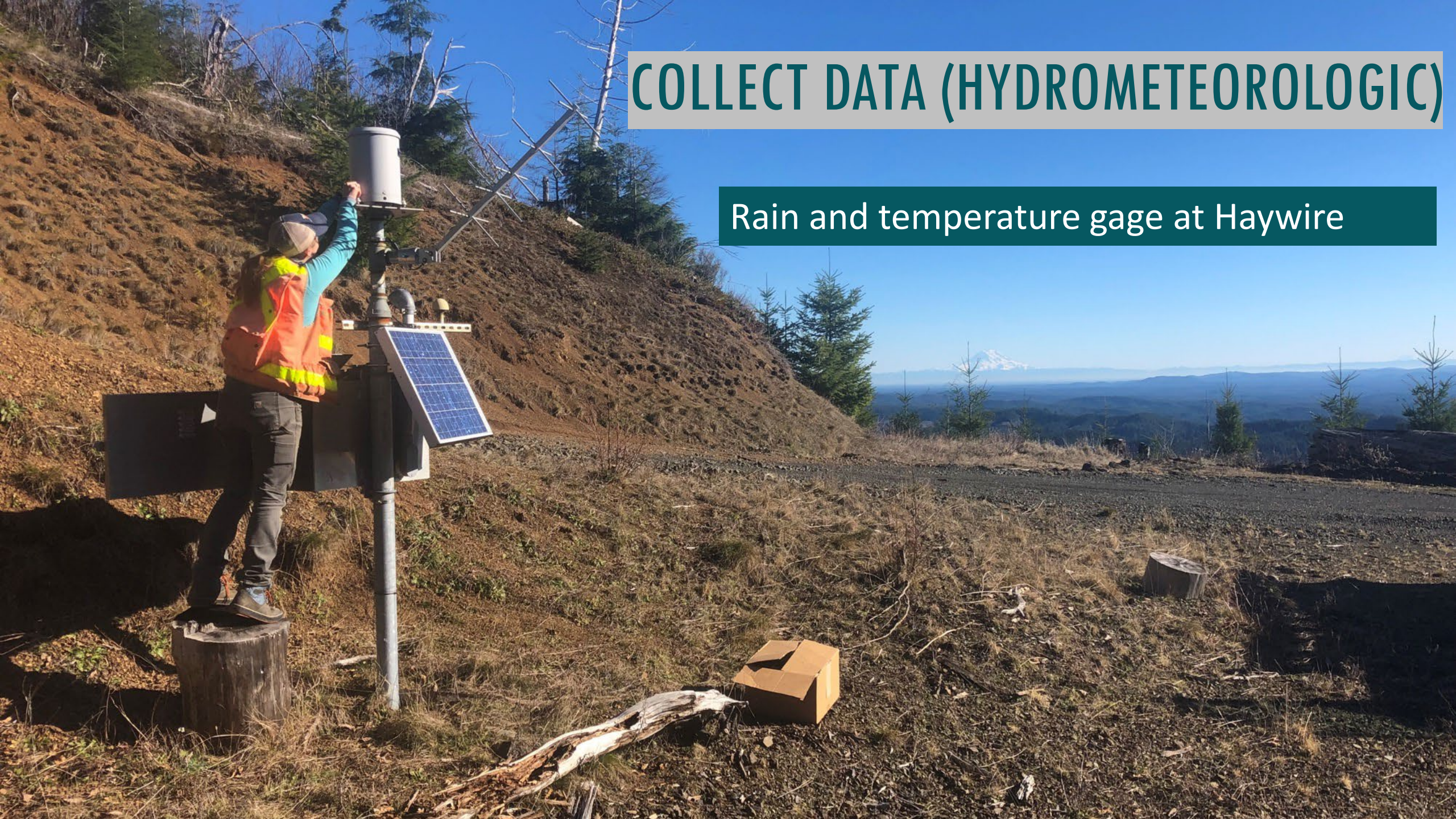
COLLECT DATA (HYDROMETEOROLOGIC)

Installing a river gage at the West Fork Satsop River

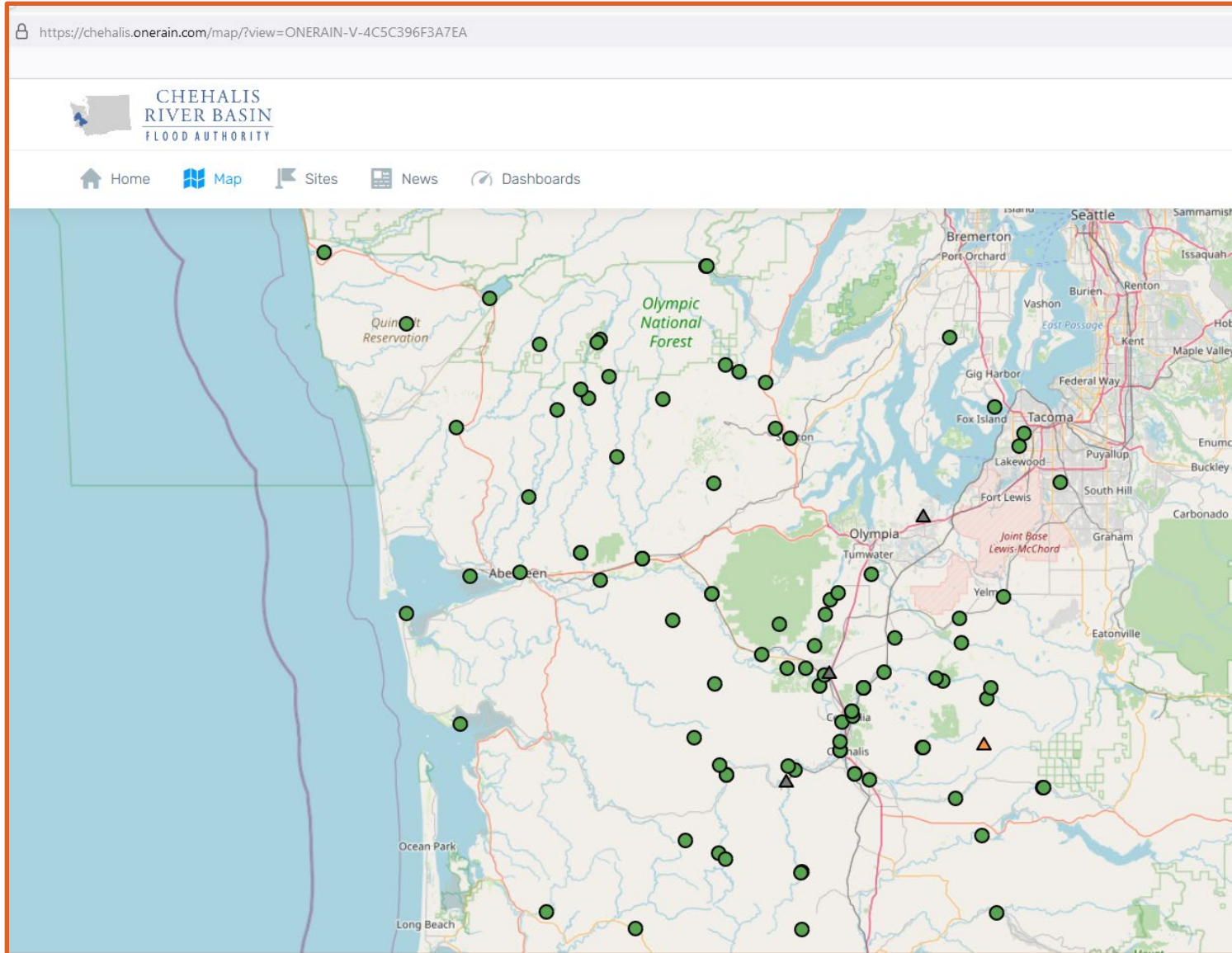


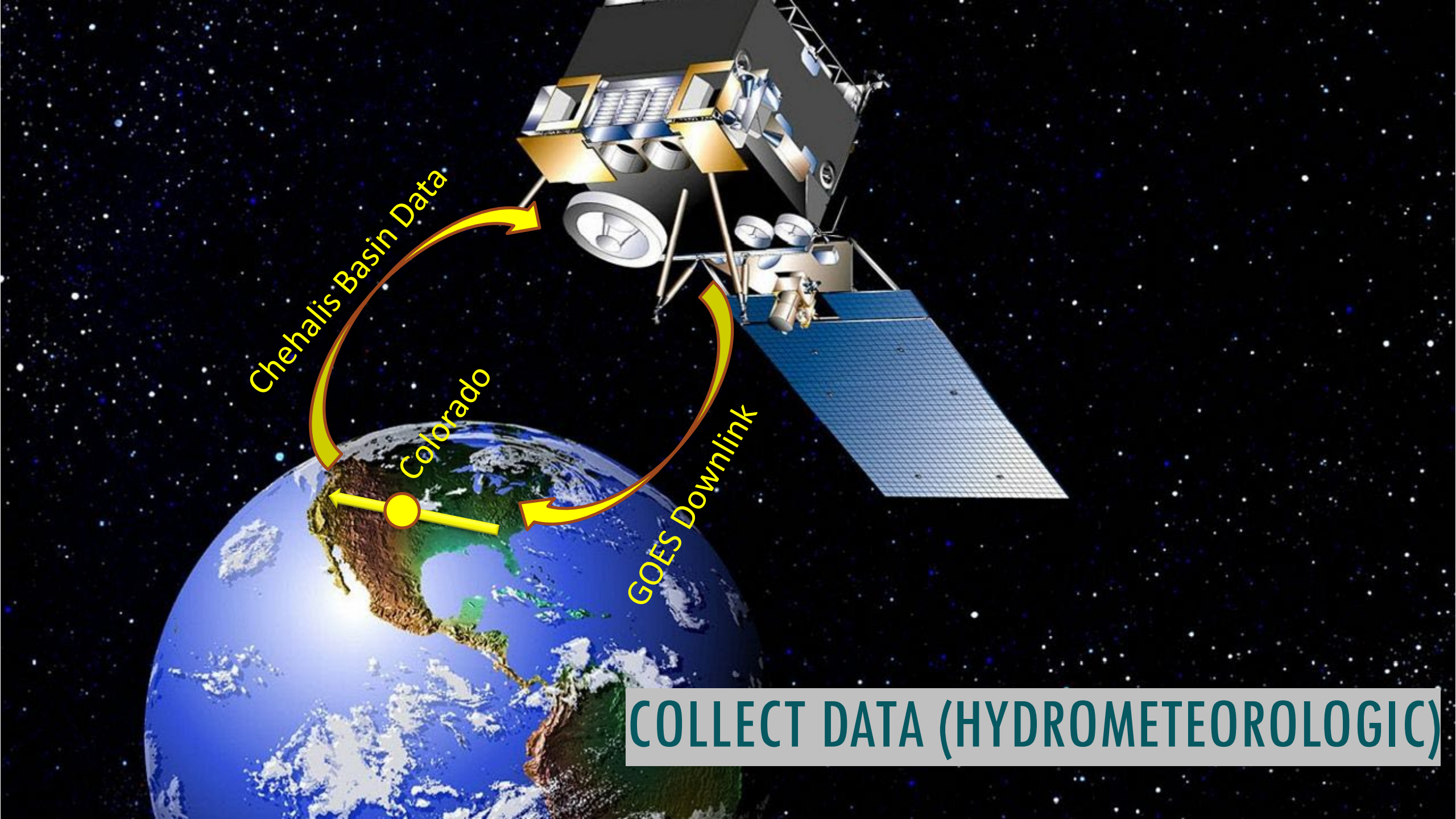
COLLECT DATA (HYDROMETEOROLOGIC)

Rain and temperature gage at Haywire



COLLECT DATA (HYDROMETEOROLOGIC)





Chehalis Basin Data

Colorado

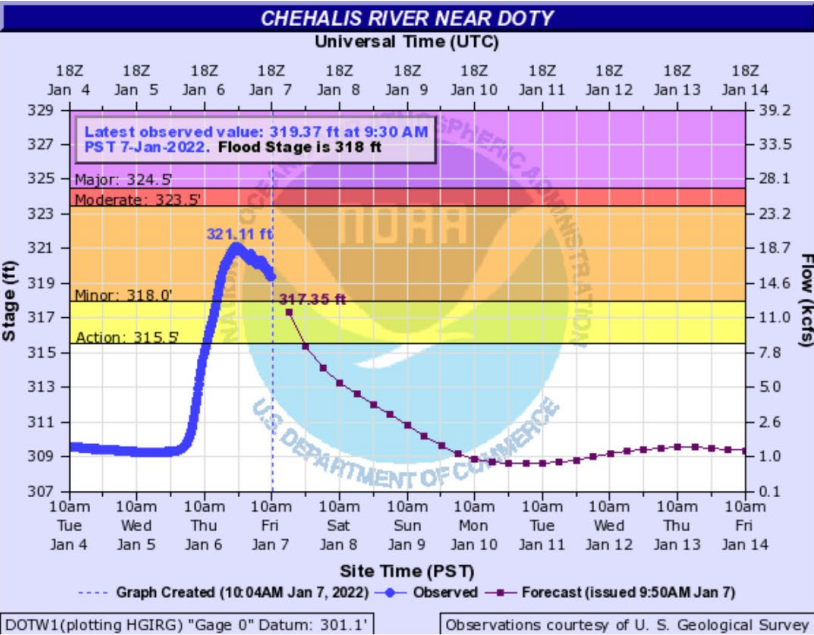
GOES Downlink

COLLECT DATA (HYDROMETEOROLOGIC)

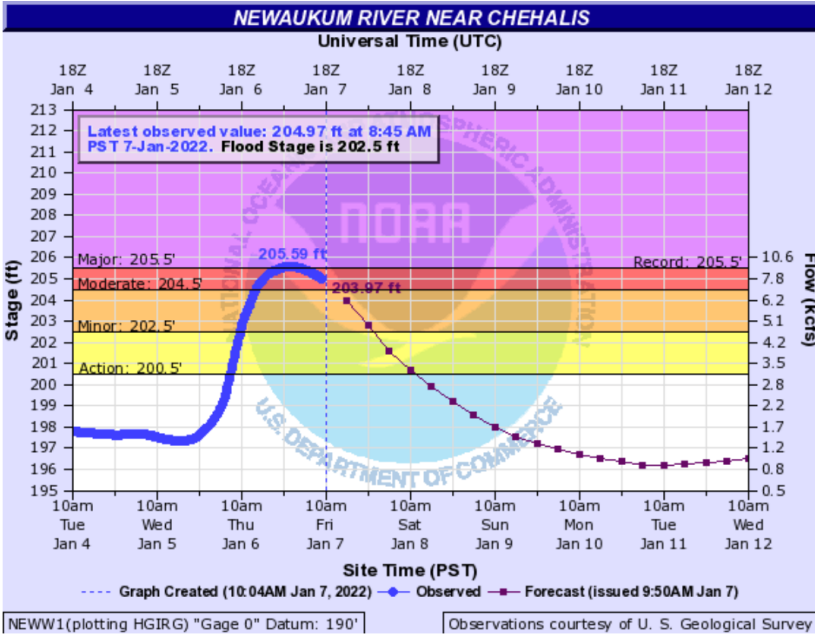
PROVIDE DATA, VISUALIZATIONS

EXAMPLE: NWS FORECASTS

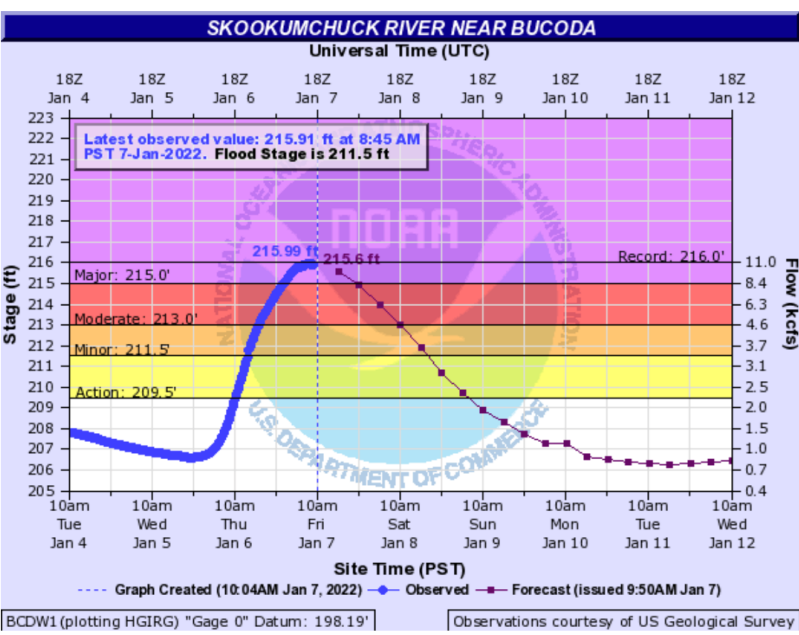
Chehalis at Doty



Newaukum near Chehalis



Skookumchuck near Bucoda

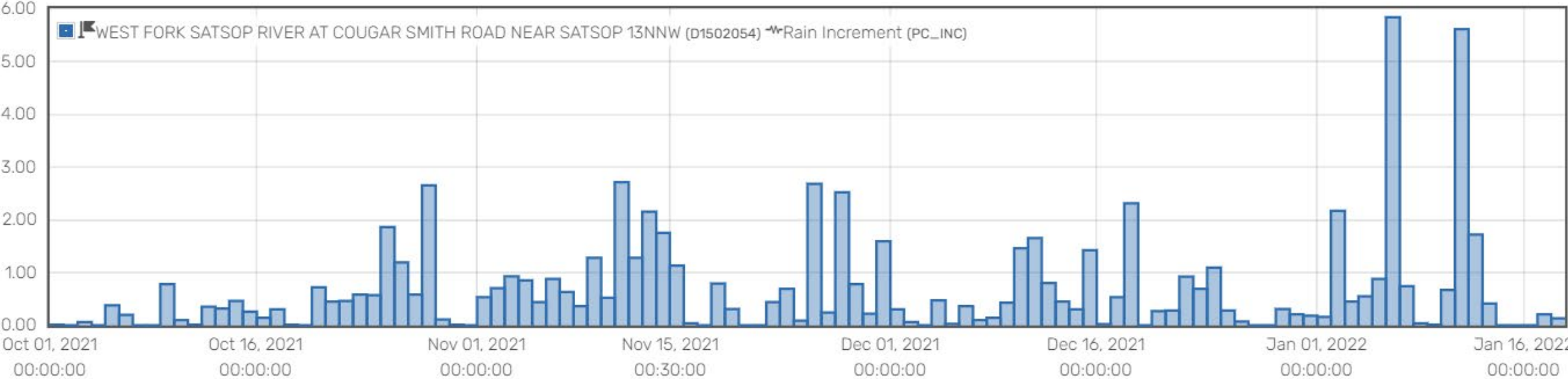


PROVIDE DATA, VISUALIZATIONS

EXAMPLE: RAINFALL IN BEEVILLE (89.98 INCHES)

01 October, 2021 - 18 January, 2022

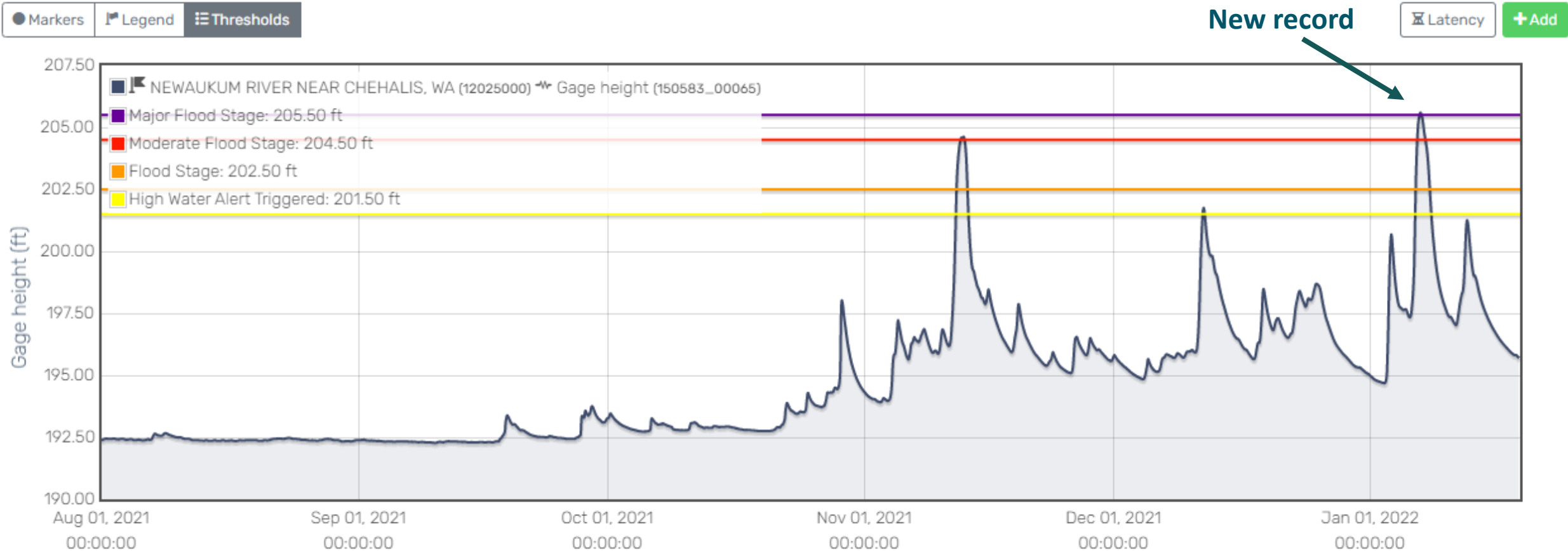
Markers Legend Daily



PROVIDE DATA, VISUALIZATIONS

EXAMPLE: NEWAUKUM RIVER LEVEL NEAR CHEHALIS

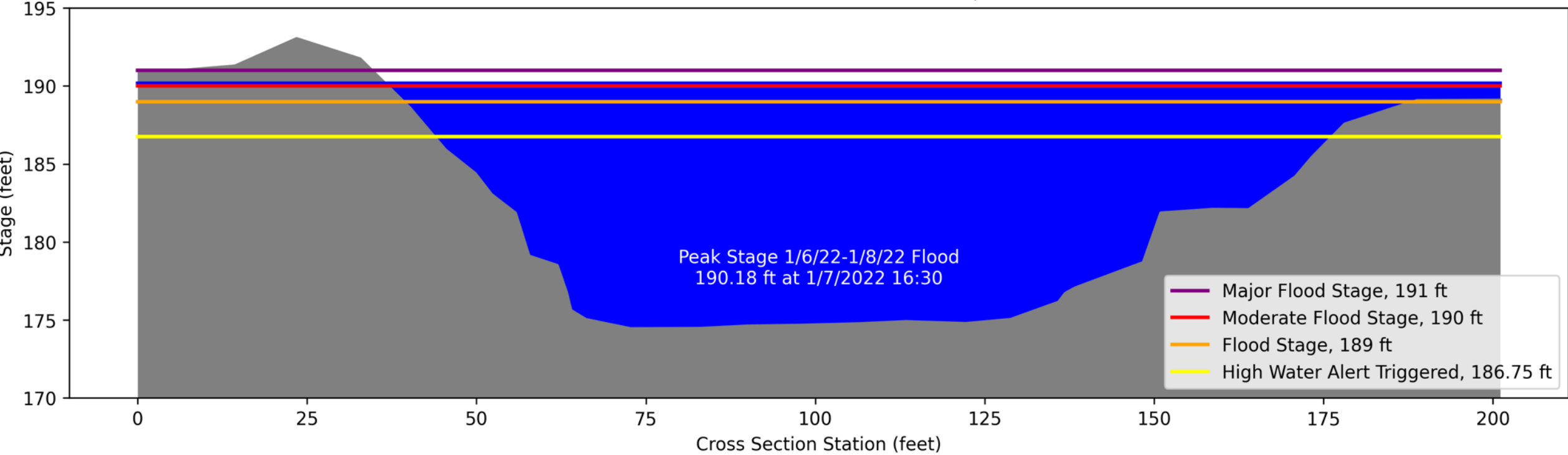
01 August, 2021 - 18 January, 2022



PROVIDE DATA, VISUALIZATIONS

EXAMPLE: RIVER CROSS SECTION CHARTS

Skookumchuck River at Centralia, WA



PROVIDE DATA, VISUALIZATIONS

EXAMPLE: LIVE WEB CAMS



Chapman Farms

PROVIDE DATA, VISUALIZATIONS

EXAMPLE: LIVE WEB CAMS

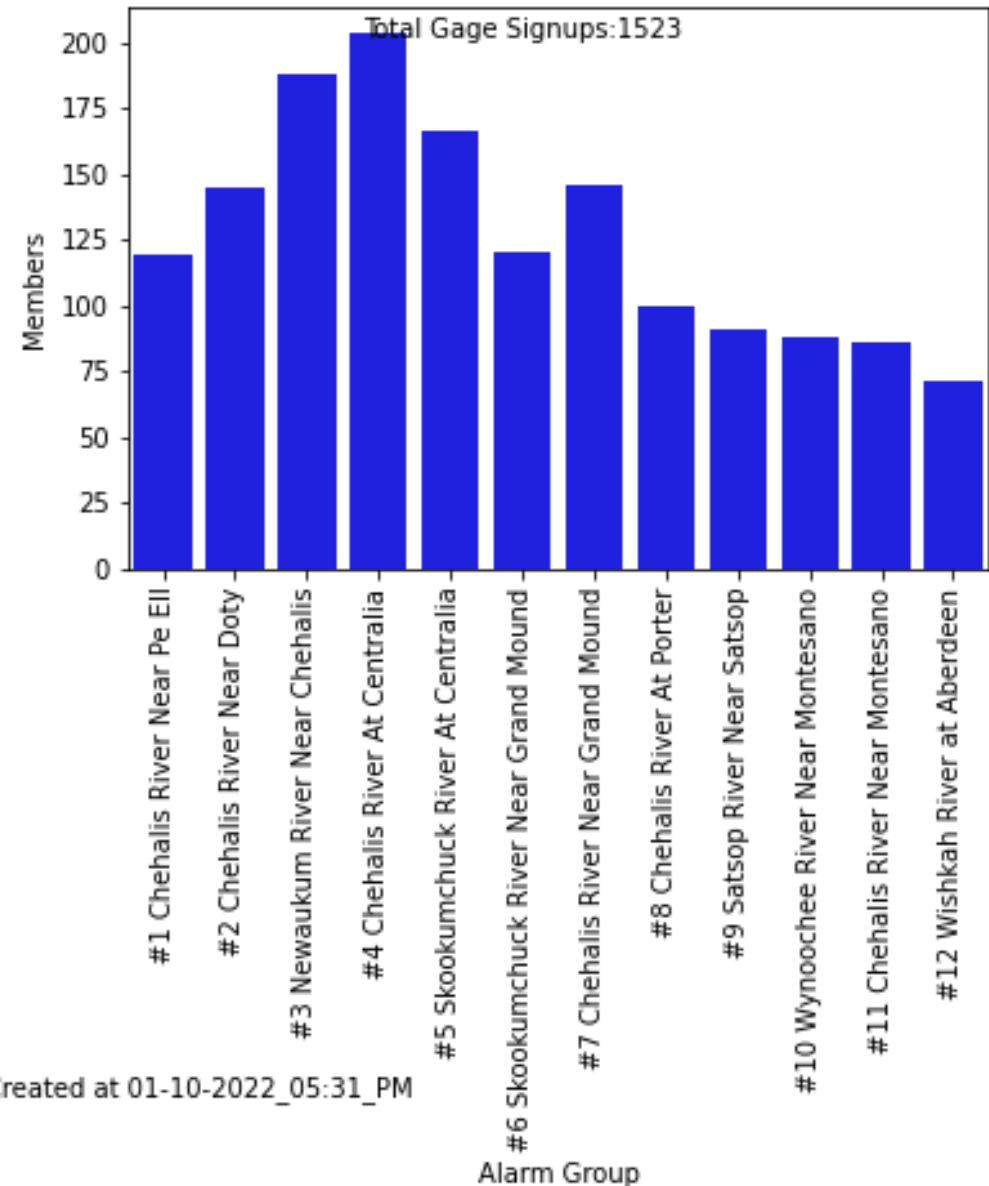


Chapman Farms

SUPPORT INDIVIDUAL DECISION-MAKING

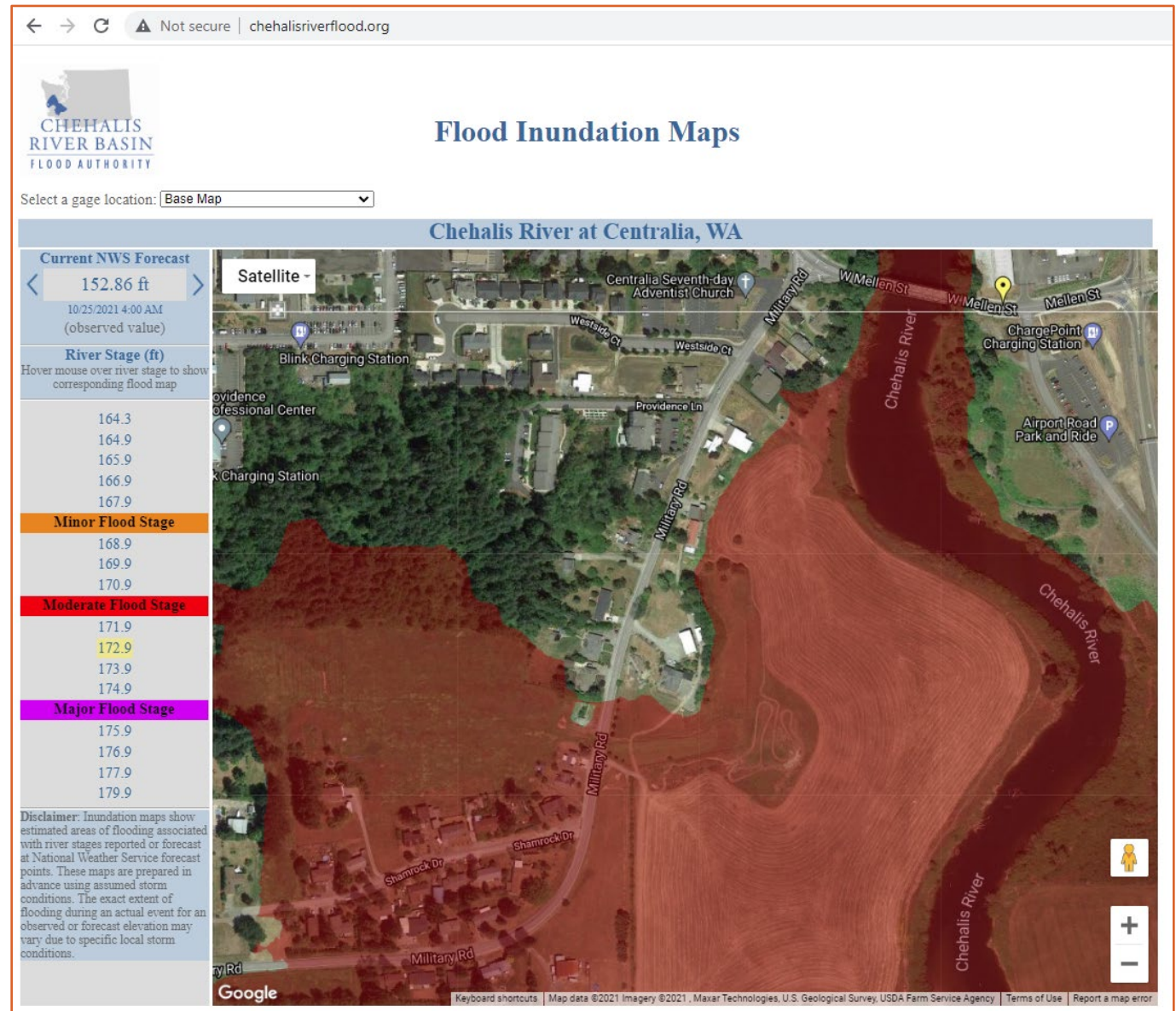
EMAIL HIGH WATER ALERTS

- 13 high water alert gages, each with a unique link
- Sign up for email alerts for specific river level gages
- Email Scott Boettcher at scottb@sbgh-partners.com

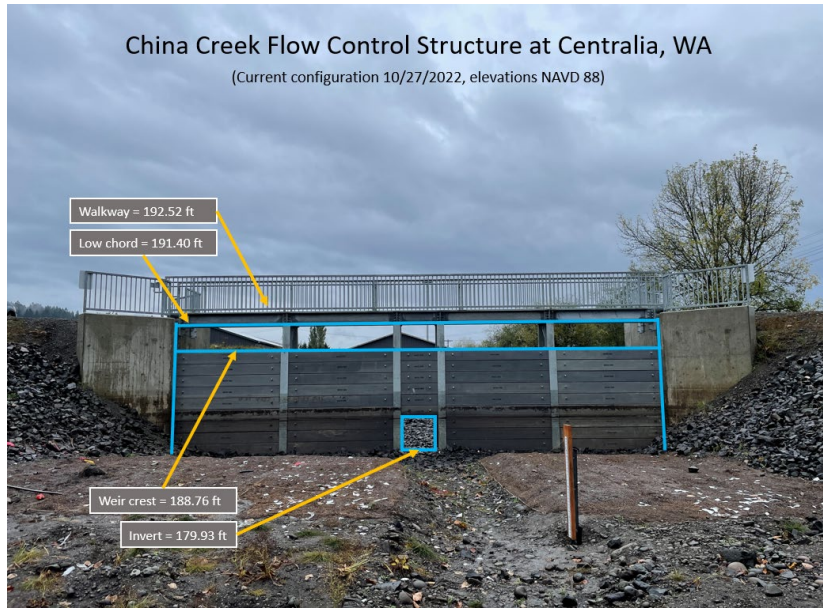


SUPPORT INDIVIDUAL DECISION-MAKING

INUNDATION MAPS



WHAT'S NEW



China Creek

CHEHALIS RIVER BASIN FLOOD AUTHORITY

Home Map Sites News Dashboards

CHINA CREEK ABOVE FCS AT CENTRALIA, WA (D1503DF0)

Home Sites

Sensors

Battery (VB)	12.7 V	2 hours ago
Rain Accumulation (PC)	1.49 in	an hour ago
Rain Increment (PC_INC)	0.00 in	an hour ago
Stage (HG)	183.05 ft	an hour ago

Map

Notes

A new gaging station was installed on 10/27/2022 above the flow control structure. Stage values are NAVD 88.

Images

46.7225220, -122.9496500 Elevation: 183

WHAT'S NEW

Looking upriver from Montesano WWTP

Images limited to daylight hours.

Wynoochee River at Montesano, WA

Latest



2022-09-14 15:47:04



Looking upriver at Mellen Street bridge

Images provided throughout the day.

Chehalis River at Centralia, WA

Latest



2022-09-14 15:30:56



Looking at downstream face of Heron St. bridge

Wishkah River at Aberdeen, WA

Latest



2022-09-14 15:48:07



Looking at Wishkah River staff gage

Wishkah River at Aberdeen, WA - zoomed

Latest



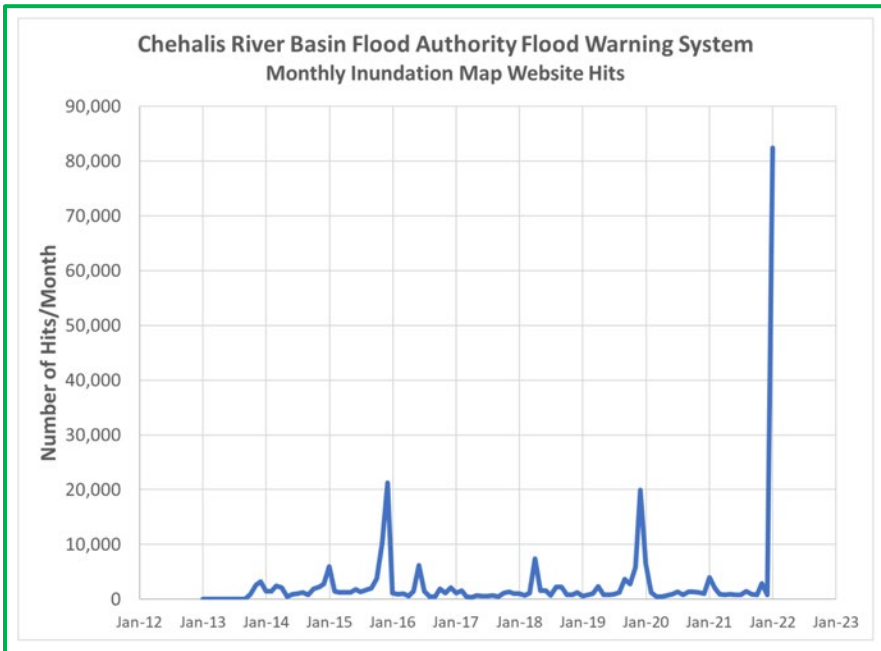
2022-09-14 15:48:18



Aberdeen Webcam

2. WHAT DO USERS SAY?

USAGE: JANUARY 2022 FLOODS



The Chronicle
January 6 · 🌐

If you're trying to decide to stay or go, this tool might be able to help inform your decision. The image below reflects the best projection as to what areas will be flooded if the Skookumchuck River at Centralia reaches 192.4 feet. It is projected to reach 193.1 feet.

Check out predictions in this Chehalis River Basin Flood Authority online tool here: <http://chehalisriverflood.org/>

Disclaimer from the site: Inundation maps show estimated areas of flooding associated with ... [See more](#)

CHEHALIS RIVER BASIN FLOOD AUTHORITY

Flood Inundation Maps

Select a gage location: Skookumchuck River at Centralia

Skookumchuck River at Centralia, WA

Current NWS Forecast: 185.73 ft (observed value)

River Stage (ft): 184.4, 185.4, 186.4, 187.4, 188.4

Minor Flood Stage: 189.4

Major Flood Stage: 190.4, 191.4, 192.4

Disclaimer: Inundation maps show estimated areas of flooding associated with river stages reported or forecast at National Weather Service forecast points. These maps are prepared in advance using assumed storm conditions. The exact extent of flooding during an actual event for an observed or forecast duration may vary due to specific local storm conditions.

202 Comments 388 Shares

Washington Emergency Management Division
January 6 · 🌐

There's lots of flooding potential in Western Washington in the coming days. One area of concern is the Chehalis River and the Skookumchuck River. The Chehalis Basin Flood Authority has potential flood maps & alert systems in place for residents to get warnings. You can find river gages near you and sign up to get notified about flooding issues near you. If flooding impacts you, sign up. You can also look at what areas are forecasted to be impacted by floods using Flood Inun... [See more](#)

CHEHALIS RIVER BASIN FLOOD AUTHORITY

Home Map Sites News Dashboards

- Weather Forecast
- Rainfall Forecast
- River Forecast
- Flood Maps
- Plot Gage Data
- Gage Data Maps
- Landslide
- Radar Rainfall
- Road Conditions
- USGS Gages
- Atmospheric Rivers
- Chehalis Basin Gage Height Conversion Project

Photo Credit:

148 🗨️ 10 Comments 110 Shares

Like Comment Share

FEBRUARY 2022 USER SURVEY

Why sign-up for email high-water alerts?

- “In 2007 I was caught unaware in the flood!”
- “Our house flooded in '96 and '07—we like to be prepared. The gauges and alerts give us more peace of mind. Info=peace of mind.”
- “I’m a school superintendent. We have to decide on the safe passage of students.”
- “To be informed and to ensure that tenants are aware of issues.”

What are benefits of inundation maps?

- “They provide a visual representation of where problems are and are anticipated.”

3. HOW CAN YOU HELP?

#1 SIGN-UP FOR EMAIL HIGH-WATER ALERTS

www.chehalisriverflood.com

scottb@sbgh-partners.com



Chehalis Basin Flood Warning Email Alerts

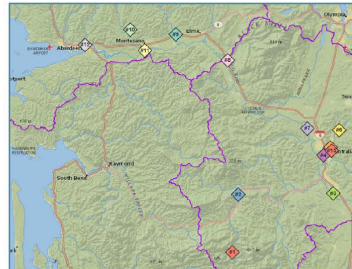


Sign-Up Today!

Chehalis Basin Flood Warning System sends automatic email alerts about rising flood waters.

Email Gage Alerts

- #1 Chehalis River below Thrash Creek -- <https://bit.ly/2JVSzuj>
- #2 Chehalis River near Doty -- <https://bit.ly/28HTeKq>
- #3 Newaukum River near Chehalis -- <https://bit.ly/3pzrmhF>
- #4 Chehalis River at Centralia -- <https://bit.ly/2lq8SPW>
- #5 Skookumchuck River at Centralia -- <https://bit.ly/3plwOz>
- #6 Skookumchuck River near Bucoda -- <https://bit.ly/2H3lATY>
- #7 Chehalis River near Grand Mound -- <https://bit.ly/26zBoq1>
- #8 Chehalis River at Porter -- <https://bit.ly/3ktep4Y>
- #9 Satsop River near Satsop -- <https://bit.ly/2Us4emC>
- #10 Wynoochee River near Montesano -- <https://bit.ly/2HnuB3>
- #11 Chehalis River near Montesano -- <https://bit.ly/26CLqEd>
- #12 Wishkah River at Aberdeen -- <https://bit.ly/2w63JR8>
- #13 China Creek above FCS at Centralia -- <https://bit.ly/2Zc6Gj>



Click [here](#) to open Email Gage Alerts map.

Sign-Up today to receive email gage alerts.

Email scottb@sbgh-partners.com and dcurtis@westconsultants.com:

- Your name.
- Your email.
- **Email Gage Alerts** numbers (above) you are interested in.

Questions.

Scott Boettcher, Staff
Chehalis River Basin Flood Authority
scottb@sbgh-partners.com
360/480-6600

www.chehalisriverflood.com



Alertas por Correo Electrónico de la Advertencia de Inundaciones en la Cuenca del Chehalis



¡Apúntese hoy!

El Sistema de Advertencia de Inundaciones de la Cuenca del Chehalis envía alertas por correo electrónico acerca del crecimiento de aguas de inundación.

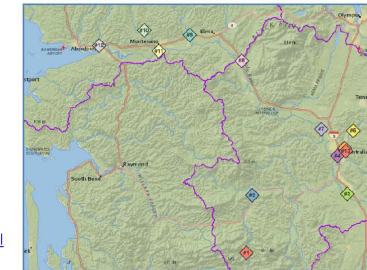
Alertas por Correo Electrónico

- #1 Río Chehalis debajo del Arroyo Thrash - <https://bit.ly/2JVSzuj>
- #2 Río Chehalis cerca de Doty - <https://bit.ly/28HTeKq>
- #3 Río Newaukum cerca de Chehalis - <https://bit.ly/3pzrmhF>
- #4 Río Chehalis cerca de Centralia - <https://bit.ly/2lq8SPW>
- #5 Río Skookumchuck en Centralia - <https://bit.ly/3plwOz>
- #6 Río Skookumchuck cerca de Bucoda - <https://bit.ly/2H3lATY>
- #7 Río Chehalis cerca de Grand Mound - <https://bit.ly/26zBoq1>
- #8 Río Chehalis en Porter - <https://bit.ly/3ktep4Y>
- #9 Río Satsop cerca de Satsop - <https://bit.ly/2Us4emC>
- #10 Río Wynoochee cerca de Montesano - <https://bit.ly/2HnuB3>
- #11 Río Chehalis cerca de Montesano - <https://bit.ly/26CLqEd>
- #12 Río Wishkah en Aberdeen - <https://bit.ly/2w63JR8>
- #13 Arroyo China arriba de FCS en Centralia - <https://bit.ly/2Zc6Gj>

El Sistema de Advertencia de Inundaciones de la Cuenca del Chehalis



Mapa de los medidores de flujo en la cuenca



Haga clic [aquí](#) para ver el mapa de medidores de flujo.

Apúntese hoy para recibir las alertas por email de los medidores de flujo.

Email scottb@sbgh-partners.com y dcurtis@westconsultants.com:

- Su nombre.
- Su correo electrónico
- *Los números de medidores de flujo que le interesan.*

Preguntas.

Scott Boettcher, Staff
Chehalis River Basin Flood Authority
scottb@sbgh-partners.com
360/480-6600

www.chehalisriverflood.com

www.chehalisriverflood.com

scottb@sbgh-partners.com

#2 PUT LINKS ON YOUR WEBSITES



#3 COMMENT ON 2023 GAGE PLAN UPDATE



GAGE MASTER PLAN



October 18, 2017



RECOMMENDATIONS

- **Add Additional HADS, USGS, and METAR Precipitation Gages.** Rather than installing more gages on the ground, it is advisable to include gages that are already operating in the Chehalis Basin, but are not yet part of the Chehalis River Basin Flood Warning System.
- **Add Ecology Stream Gages to Contrail.** Five Ecology stream gages that are not included in the HADS system are located in the basin. These gages are primarily located on small tributaries to the Chehalis River (Figure 2.7) and can be added to HADS and then to Contrail.
- **Upgrade Two National Weather Service Flood River Gages near Centralia.** The stream gages on the Chehalis River gage near Centralia and on the Skookumchuck River at Centralia should be upgraded to current technology. (This is complete.)
- **Convert Gages to NAVD88 Datum.** The USGS and the Flood Authority are jointly funding the conversion of the USGS gages in the Chehalis Basin to the NAVD 88 vertical datum by the summer of 2018. Ecology is currently converting their gages to NAVD 88.

12



- **Outreach Program to Educate Agencies and Public on Datum Conversion.** Create an outreach and educational awareness datum conversion plan, with the goal of providing support to the identified agencies and public about the vertical datum change.
- **Update GOES DCS.** The Flood Authority should upgrade its gages to GOES Version 2.0. (The Flood Authority Authorized the upgrade and the upgrade is in progress.)
- **Add City of Aberdeen Stream Gage to Contrail.** If arrangements are made with the City of Aberdeen to access the City's stream gage data, the data could then be added to the Contrail.
- **Add NWRFC River Forecasts to Contrail.** NWRFC has eight river forecast locations on the Chehalis River. NWRFC River forecasts at these locations can be added as sensors to Contrail. Alarms can then be designed based on the forecasted data.
- **Consider Adding GARR to Contrail.** Gage Adjusted Radar Rainfall (GARR) data uses rain gage data in combination with real-time NEXRAD radar to create a more accurate spatial distribution of real-time precipitation. Although the added benefit of adding GARR will be reduced as more gages are added, there is still a value associated with GARR. It would increase the accuracy of real time rain on the ground estimates and longer termed archived quality controlled data.

4. ANY QUESTIONS

QUESTIONS



Scott Boettcher, Staff
Chehalis River Basin Flood Authority
scottb@sbgh-partners.com
360/480-6600
www.chehalisriverflood.com

Take-Aways:

- ✓ This is your system.
- ✓ Feedback is essential.
- ✓ Information = 1st line of defense.

Chehalis Basin Strategy:

www.chehalisbasinstrategy.com