

Rivers, Watersheds & Communities Program

27 April 2023



WASHINGTON STATE
UNIVERSITY

Observations

- Rivers are experiencing increasing water quality challenges: an invisible crisis
- Watersheds are the hydrological management unit
- Communities are working on solutions: collaboration

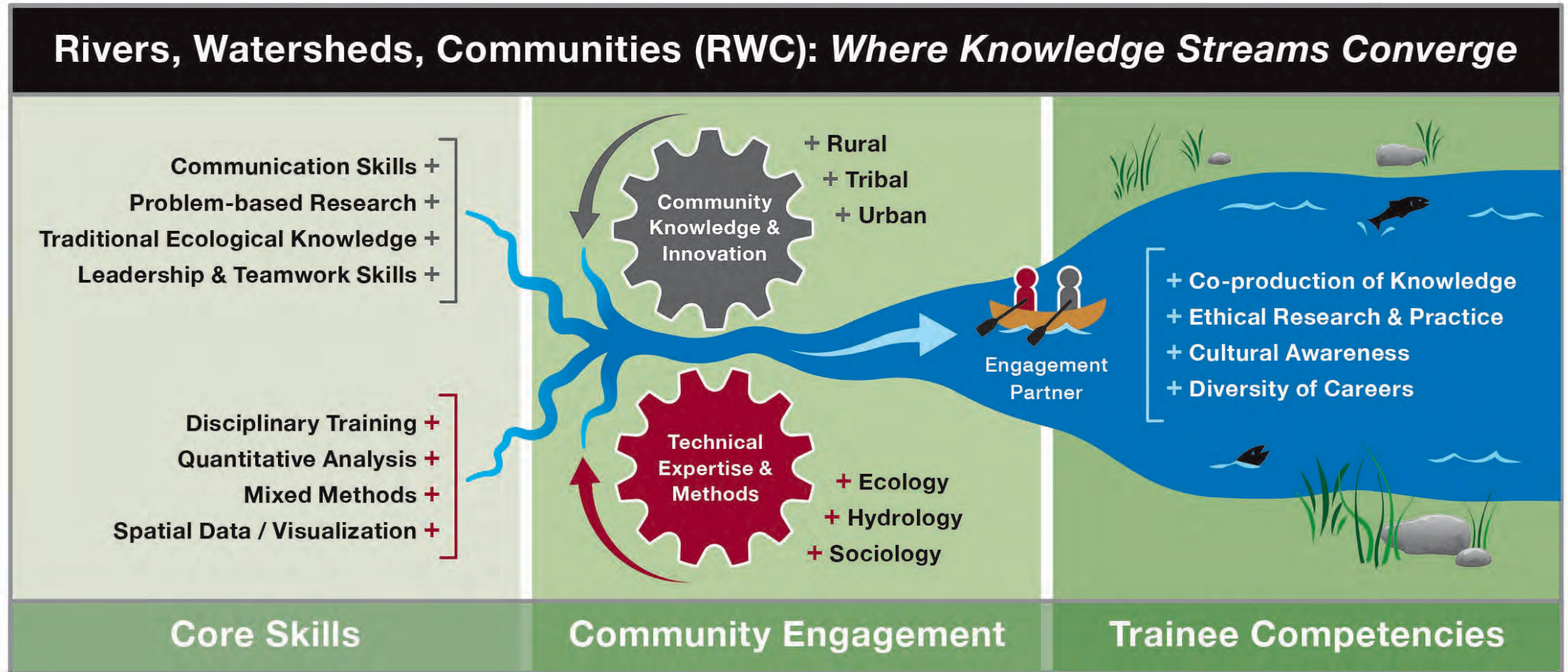


Rivers, Watersheds, & Communities (RWC)

Training an Innovative,
Cross-Sector Workforce
for Equitable,
Multi-Scale Decision-
Making Towards Human
and Ecosystem Health

- A program for MS and PhD in research-based programs to develop the skills, knowledge, and competencies needed to pursue a range of STEM careers
- Implement a **community engagement model** of graduate education
 - Engage with communities to co-produce solutions and opportunities to the invisible water crisis
- Focus on **student-centered mentoring**

our approach



What do we
mean by
community
engagement?

How we understand it

- Begins with recognition that communities face diverse & complex issues and may already possess a variety of assets to implement solutions or identify problems
- Co-identify challenges and co-produce solutions and opportunities with communities

What do we mean by community engagement?

Intended impacts

- Use engagement model for the university to work towards scientific approaches to training, research, & problem solving
- Embed students in multi-directional transfer of knowledge between communities, tribes, the university, agencies, & policy makers

Level of Community Involvement, Impact, Trust, and Communication Flow

Outreach	Consult	Involve	Collaborate	Shared Leadership
<p>Entities aware of each other</p> <p>Unidirectional comm flow</p> <p>Provides information to community</p> <p>Outcome: Builds comm. channels, shares new knowledge</p>	<p>Entities share information</p> <p>Comm focused on answering question(s)</p> <p>Gets information / feedback from community</p> <p>Outcome: Develops a relationship between entities</p>	<p>Entities cooperate</p> <p>Comm flows both ways to ask and answer</p> <p>Involves more participation w community on parts of project</p> <p>Outcome: Establishes a cooperative partnership</p>	<p>Entities work together closely</p> <p>Comm flows both ways to ask and answer</p> <p>Partnerships for each aspect of the project - from development to solution</p> <p>Outcome: Trusted partnership</p>	<p>Entities in a bi-directional relationship</p> <p>Final decision-making is at community level</p> <p>Strong, fully integrated partnerships</p> <p>Outcome: Broad impacts, strong trust</p>



The RWC Living Atlas

<https://tinyurl.com/5n7m58tx>

Centralized repository of multimedia information representing a range of scales and a diversity of disciplinary and research-related information

Forests to Faucets 2.0 Data Explorer

States
All States

Watersheds:
Sorted by Surface Drinking water Importance within the map frame or by selected state from the states dropdown list.

- Indian Creek-North Fork American River (CA)
- Lower Big Tujunga Creek (CA)
- Bull Creek (CA)
- Arroyo Seco (CA)
- Middle East Branch Croton River (CT,NY)
- Lower East Branch Croton River (CT,NY)
- Kensico Reservoir (CT,NY)
- Lower Anacostia River (DC,MD)
- Nichols Run-Potomac River (DC,MD,VA)
- Limestone Creek-Lake Sidney Lanier (GA)
- Wahoo Creek (GA)
- West Fork Little River (GA)

Start Here: Search for a location or zoom in. Highlight the selection tool to pick a watershed or watershed(s) to explore.

Watershed Summary

# Watersheds	Surface Water Intakes	Surface
83.3k	16.2k	330.1M

Directions

This panel contains 5 tabs. Use the arrows or buttons at the bottom of the page to toggle between the panels.

Navigation | Details | Water Use | Public Water Supply | Potential Threats

- Navigation:** Displays the number of watersheds, the number of surface water intakes and the surface water population served for the entire map extent or filtered if a watershed is selected from the watershed panel on the left.
- Details:** Displays detail information for the selected (or first, if no selection is made) watershed in the watershed panel.
- USGS Water Use:** A chart of the water use with the current map extent.
- Public Water Supply:** Lists the Public Water Supply for the selected watershed, or full dataset, if no selection is made.
- Potential Risks:** Displays 4 risk gauges for Wildfire Risk, Insect and Disease Risk, Water Yield Decrease, and Land Use Change for the selected (or first, if no selection is made) watershed in the watershed panel.

Esri, HERE, Garmin, FAO, NOAA, EPA | Sources: Esri, TomTom, U.S. Department of ... Powered by Esri

Lessons from One River, One Future

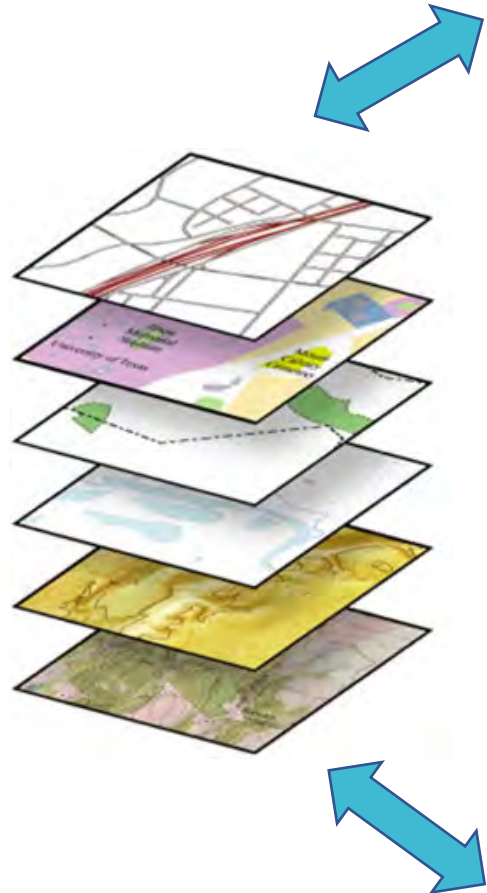
Brandon Haney, Executive Director of Operations for Columbia Power explains why he believes a new focus on ecosystems is a crucial element to renegotiation:



Brandon Haney, Executive Director of Operations for Columbia Power. Columbia Power is a public organization in British Columbia that along with its sister organization, the Columbia Basin Trust, owns a number of hydro assets on the Columbia River and its tributaries

Goals of the Living Atlas

- Highlight & tell stories about interconnections across peoples and ecosystems
- Give context to place-based research (e.g., hydrogeography, community issues faced).
- Serve as an evolving resource for incoming students and the public

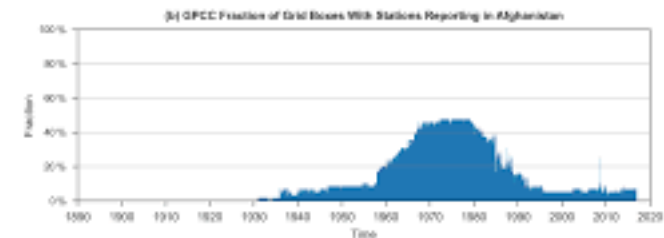
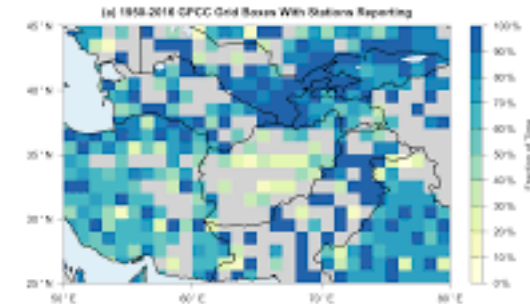


Our nation relies on forested watersheds for high-quality drinking water.



Forests are an important source of clean drinking water for millions of people in the United States, with 749 million acres of forest lands providing over half of the national water supply. Approximately 77 percent of drinking water originates from surface water sources (e.g., streams, ponds, reservoirs). However, there are increasing concerns about the quantity and quality of both ground water and surface water supplies amid climate change, population growth, land use change, and increased water demand.

The **National Forests to Faucets 2.0 (F2F2) Assessment** is a geographic analysis done by scientists



Site Locations Along the Spokane River



Year of Field Collection End Date

- 2018
- 2019

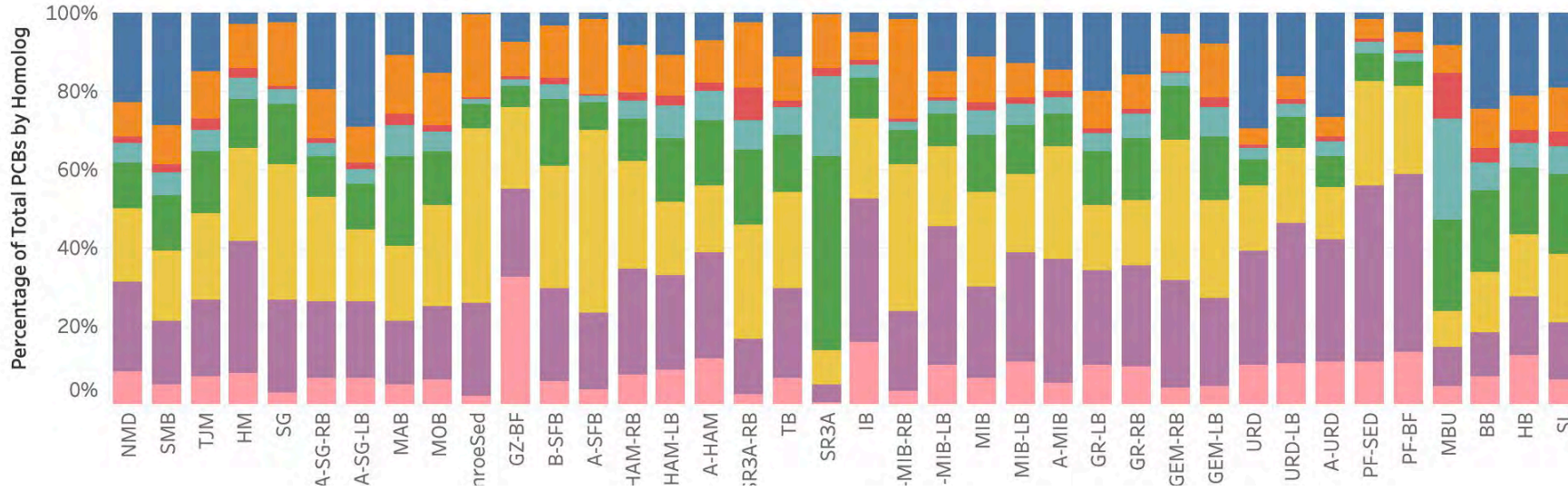
Year of Field Collection End Date

- (All)
- 2018
- 2019

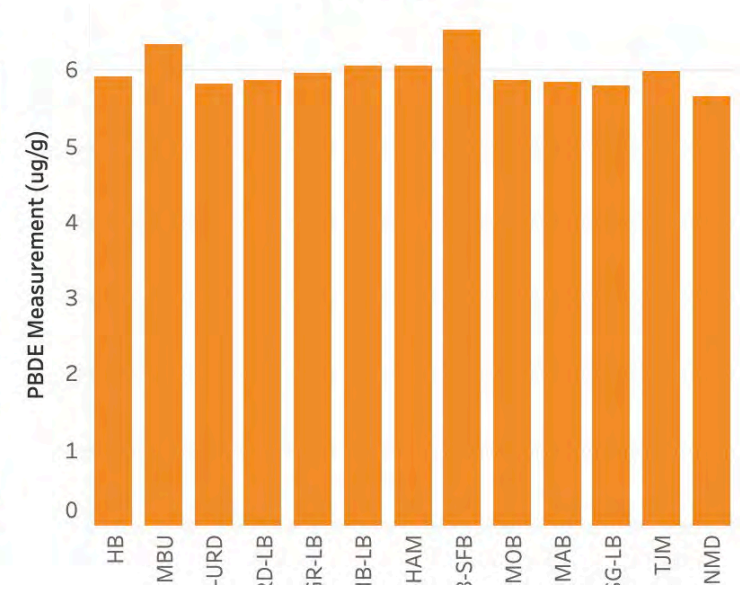
Homolog

- | | | | |
|--|--|---|--|
| ■ Di | ■ Nona | ■ Other | ■ Tetr |
| ■ Hexa | ■ Octa | ■ Penta | ■ Tri |

PCB Homolog Distributions by Measurement Site



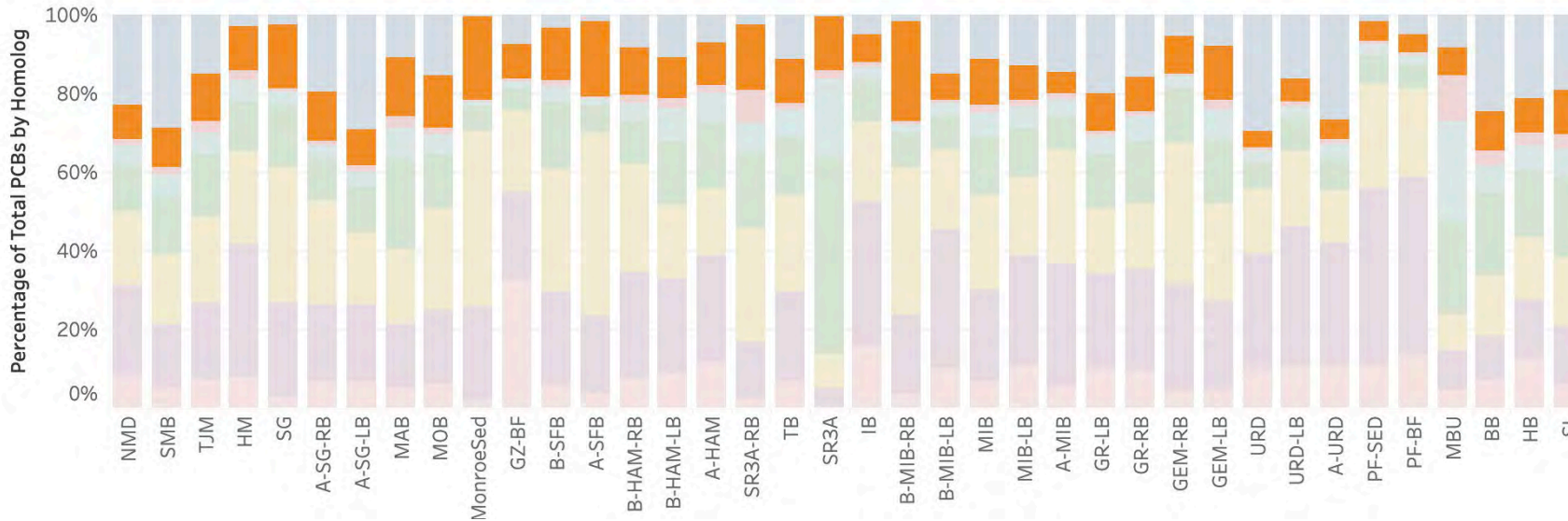
PBDEs by Location



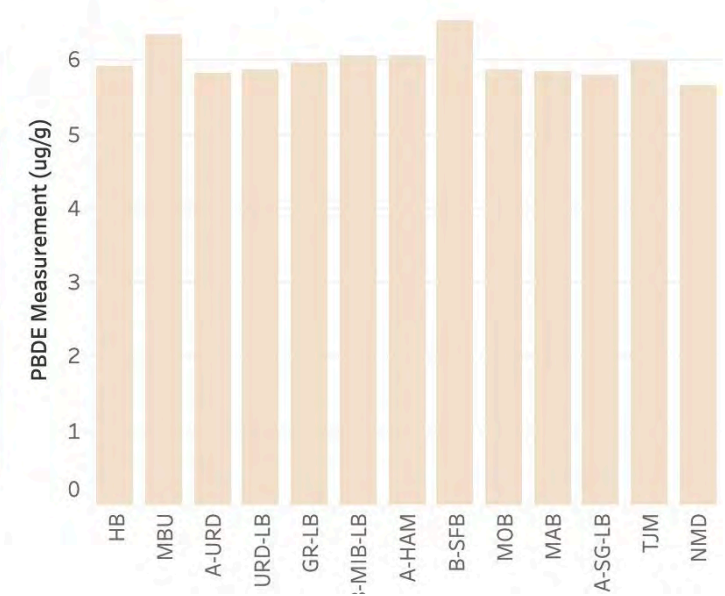
Site Locations Along the Spokane River



PCB Homolog Distributions by Measurement Site



PBDEs by Location



Site Locations Along the Spokane River



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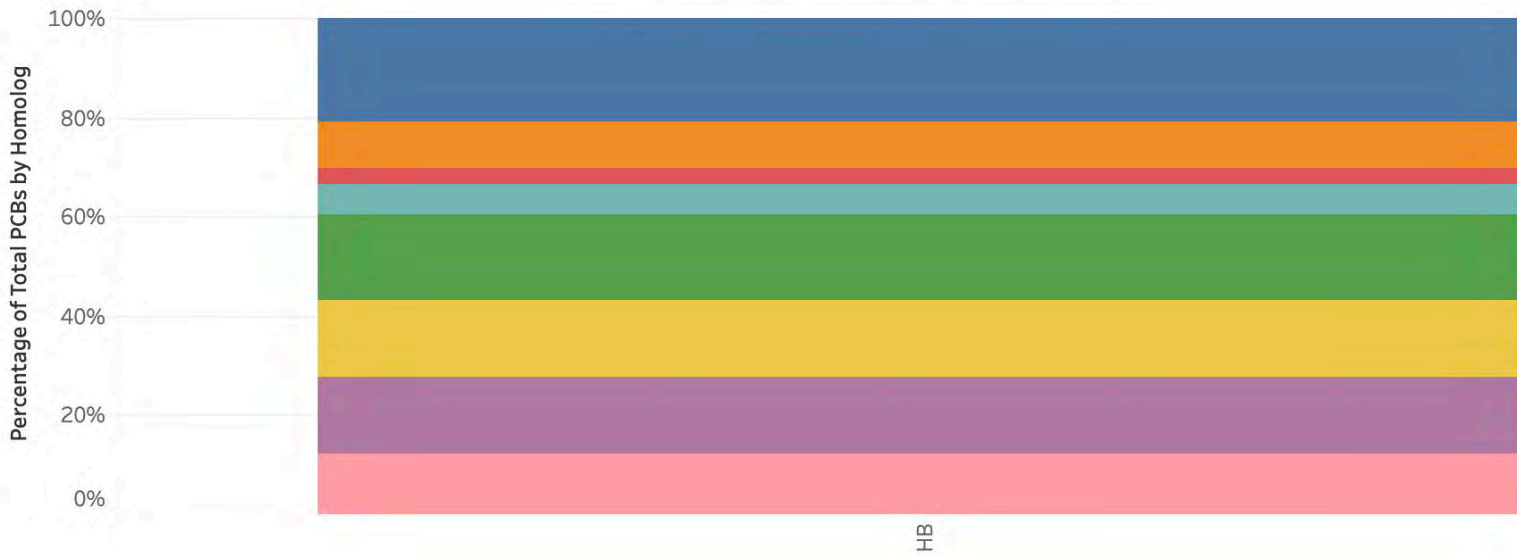
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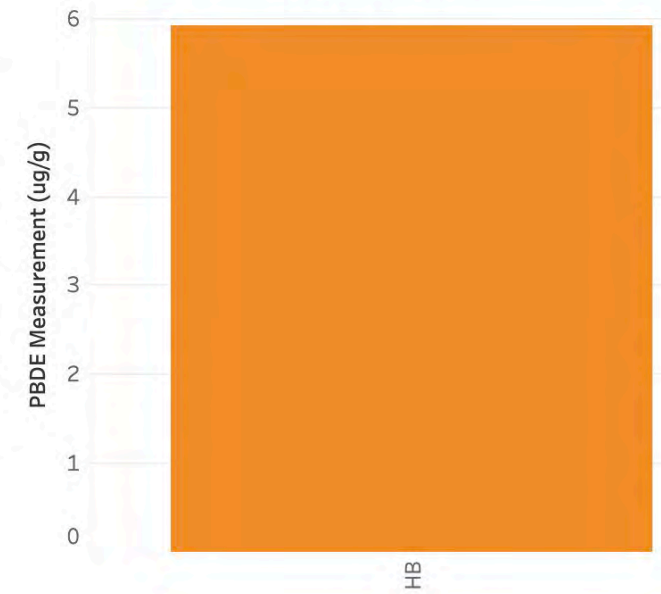
Homolog

- Di
- Hexa
- Nona
- Octa
- Other
- Penta
- Tetr
- Tri

PCB Homolog Distributions by Measurement Site



PBDEs by Location



WSDA Surface Water Pesticide Monitoring Results

Use dropdowns to the right to filter data

Select Year
2021

Select Monitoring Site(s)
No category selected

Select Pesticide Type
All Pesticide Types

Select Active Ingredient
All Active Ingredients

The Washington State Department of Agriculture (WSDA) routinely monitors surface water throughout the state for the presence of pesticides during the typical pesticide use season (March through September).

WSDA compares detected pesticide concentrations to WSDA assessment criteria, which are half of state and federal water quality criteria. Each pesticide has its own assessment criteria, based on its toxicity to aquatic animals, insects, and plants. An exceedance

4,928

Total Detections

(Detections and Exceedances)

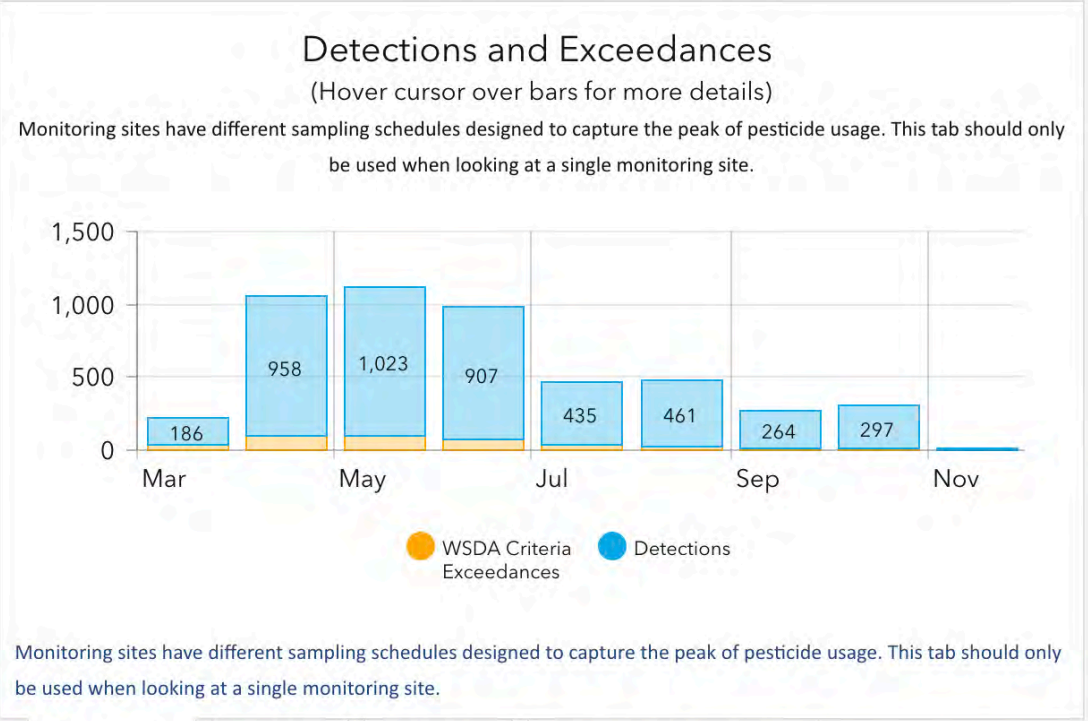
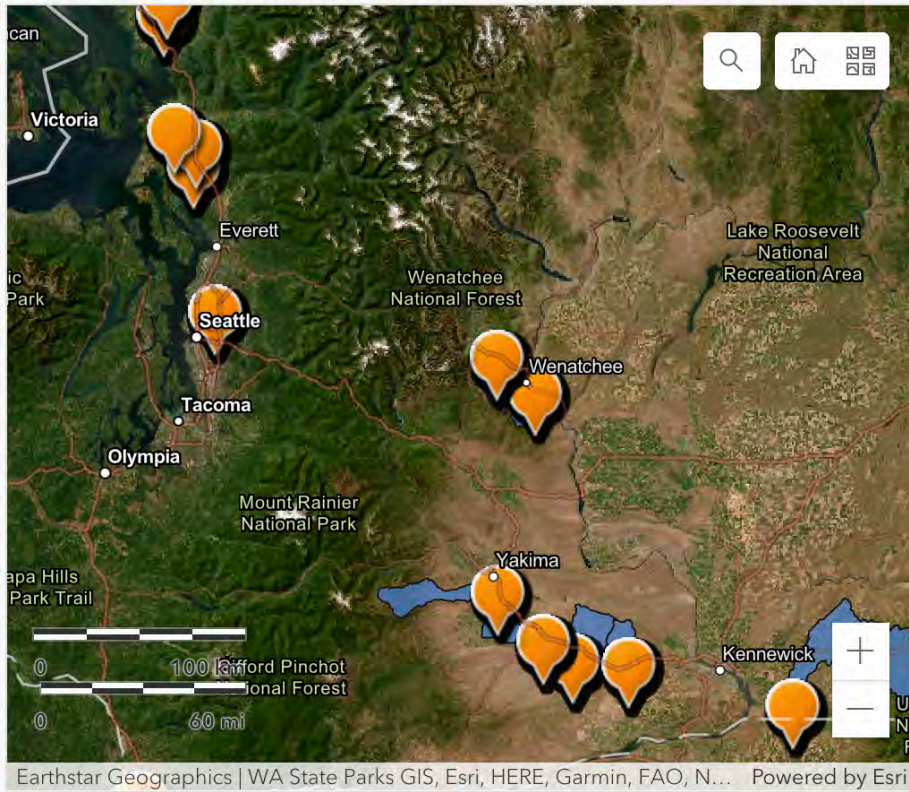
388

Exceedances

Minimum Concentration

0.0006

µg/L



Average Concentration

0.0796

µg/L

Maximum Concentration

51.6

µg/L

- [By Month](#)
- [By Site](#)
- [By Type](#)
- [By Active Ingredient](#)

Interested in
being a client?

Integrated Solutions Experience Course (Fall 2023)

- Working with a 'client', students will engage directly with real world needs in a specific community in order to produce solutions and opportunities that can be directly utilized and applied
- Objectives: (1) embracing transdisciplinary learning (2) and the co-production of science through community engagement

More
information
and contact

- Website: <https://nrt-rwc.wsu.edu>
- Email: Jan Boll, j.boll@wsu.edu