Puget Sound Freshwater Monitoring Network

Continuous Water Quality Monitoring in Puget Sound

INTRODUCTION

- Discrete (single point) water quality data may underestimate nutrient loading to Puget Sound.
- Continuous instream measurements, recorded and broadcast every 15 minutes in near real-time, better track water quality and nitrates in Puget Sound.
- Collected data will support a nutrient reduction strategy and inform future management decisions across the region.

WATERSHED LOADS

- Ecology built regressions of historical discrete data from river mouths to estimate watershed loads.[1]
- Our Salish Sea Model team will use the continuous nitrate data collected over 24 hours and during peak flow events to evaluate nitrogen load estimates.

Figure 1. The Duwamish River (09A075) I-beam shuttle and sensors removed from the water for cleaning.

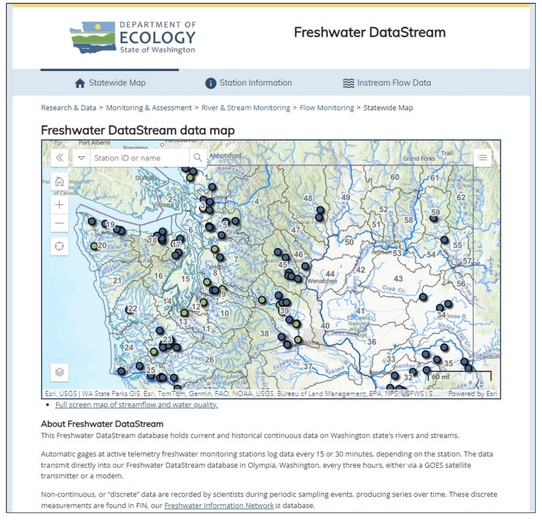
EQUIPMENT

- Solar-powered stations send data to the web in near real-time through satellite telemetry.
- The I-beam shuttle holds sensors and sampler tubing.
- Sensors measure water quality parameters every 15 minutes.
  - YSI EXO: pH, Dissolved Oxygen, Conductivity and Temperature.
  - FTS DTS-12: Turbidity.
  - Sea-Bird SUNA: Nitrate.
- A refrigerated ISCO Automated Pump Sampler collects samples to verify turbidity and nitrate sensor data.

Figure 2. A refrigerated ISCO Sampler and Data Collection Platform in a telemetered station.

To request ADA accommodation, visit https://ecology.wa.gov/accessibility, call Ecology at 360-407-6831, Relay Service 711, or TTY 877-833-6341.

Scan QR code to view the data on Ecology's Freshwater DataStream.



Watch a video and learn about the science.

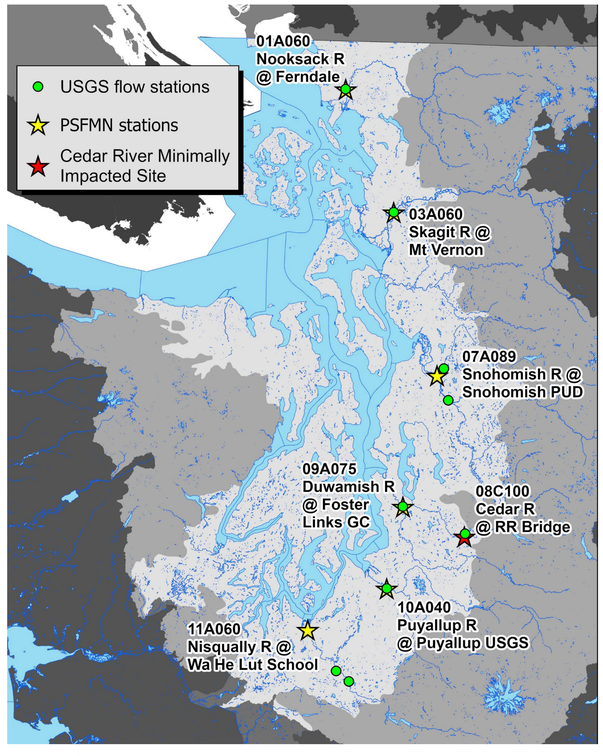


Figure 3. Puget Sound Freshwater Monitoring Network.

[1] Links to Salish Sea Model References.

STATION NETWORK

- Continuous monitoring stations on seven rivers draining to Puget Sound (Figure 3).
- Measure real-time diel fluctuations of water quality parameters, focusing on nitrate.

Figure 4. The Nisqually River at Wa-He-Lut School water quality station (11A060).

CONTINUOUS DATA

- We check continuous data on the web daily to identify trends and problems with equipment.
- We use monthly discrete samples and ISCO-collected samples during high-flow events to assess the quality of continuous data.

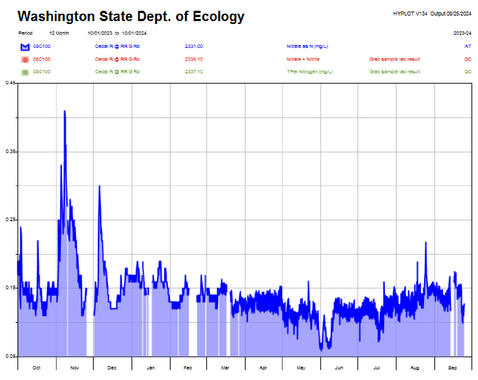


Figure 5. An online Freshwater DataStream chart of the Cedar River (08C100) continuous nitrate data.

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Prepared for the South Sound Science Symposium, Oct. 2024.
Publication Number: 24-03-022
Published: October 2024