

Sammamish Water Quality Monitoring

Annual Report 2025

Since 2019, the City of Sammamish has contracted with King County to expand water quality monitoring within the city. This annual report provides a brief overview of activities and results from 2025. It does not include all water quality monitoring within Sammamish, but only covers the activities (described below) that are part of this specific contract.

For more context, please see the 2018 City of Sammamish Water Quality & Aquatic Habitat Monitoring Plan (available online at m10082.eos-intl.net/M10082/dnrp/Details/Record.aspx?BibCode=5200245

Annual reports for past years are available through King County at: m10082.eos-intl.net/M10082/dnrp/Details/Record.aspx?BibCode=5355428

Changes to Monitoring Activities in 2025

In 2024 Endombment monitoring was discontinued on George Davis, Pine Lake, and Zackuse Creeks, as a good range of environmental conditions had been observed to categorize the non-Ebright streams. Entombment monitoring continued on Ebright Creek in 2025 to insure a wide range of conditions has been captured including higher rainfall years.

Additional monitoring on all four sites is planned for 2026. Precipitation extremes during the 2025 - 2026 wet season, particularly late season high flows warrent further sediment analysis. Late season high-flows can deposit large amounts of fines that will not be flushed out until the following wet season. These fines will be observed during June 2026 sampling, and will provide valuable data beyond normal values.

Monitoring Activities Overview

- **Ebright Creek Watershed:** Stormwater outfalls continued to be monitored for flow and temperature using continuous gages, and sampled monthly for turbidity. Wetland water level also continued to be monitored continuously.
- **George Davis / Allen Lake Wetlands:** Water level continued to be monitored continuously in this wetland complex, at the head of the George Davis and Allen Lake watersheds.
- **Zackuse Creek:** A stream gage monitored streamflow and temperature. Each month, Zackuse was sampled for bacteria, nutrients, suspended solids, and conventionals (conductivity, pH, alkalinity), and once a year was sampled for stream health (stream bug diversity). Starting in 2023, a new gage monitored water level

immediately upstream of the East Lake Sammamish Parkway to help understand how the stream and culvert respond during larger rainstorms.

- **Dam Safety Gages:** Water level is monitored at the high-priority Trossachs Div 7 and Div 8 Stormwater ponds, and the outlet to Yellow Lake. This monitoring is related to Ecology's Dam Safety Office requirements to track water elevation and outflows to help maintain dam operation and safety, especially during large rainstorms.
- **Rain gage on City Hall:** The rain gage on City Hall continued to provide precipitation data to help understand other monitoring results, and it also provided real-time information to help City staff respond to rain events.
- **Entombment:** Streambeds in Ebright Creek were assessed in early June to look for fine sediments capping the gravel, which can entomb and smother kokanee spawning beds.
- **Riparian forest:** Riparian forest canopy cover was mapped for the southern Lake Sammamish shoreline, Yellow Lake, and small streams in the south end of the city, using aerial imagery from 2021. King County staff calculated canopy cover for various stream reaches and shoreline segments, both for the entire 60-m riparian zone as well as for 10-m and 20-m zones closest to streams. These near-stream zones are especially important determinants of stream health because trees closer to the stream provide more shade, large wood, and other important inputs.

Data and Graphing

Most data in this report are available to view or download online. Hydrologic data (streamflow, water level, rainfall) are all available on the King County Hydrologic Information Center website: green2.kingcounty.gov/hydrology/GaugeMap.aspx. Stream water-quality data are available on the King County Streams Monitoring website: green2.kingcounty.gov/streamsdata. Other data may be requested from either City of Sammamish or King County staff.

This report contains both discrete and continuous data. Discrete data were collected periodically (e.g., monthly water samples for lab analyses), and are graphed as blue dots connected by a blue line. In contrast, continuous data were collected by automated gages (e.g., flow, precipitation, temperature), usually every 15 minutes. For most continuous data in this report, the daily average is graphed as a blue line, and the daily maximum and minimum are graphed as thinner grey lines (on days with very low variation, the thinner grey lines may be hidden behind the blue line).

Ebright Creek Watershed

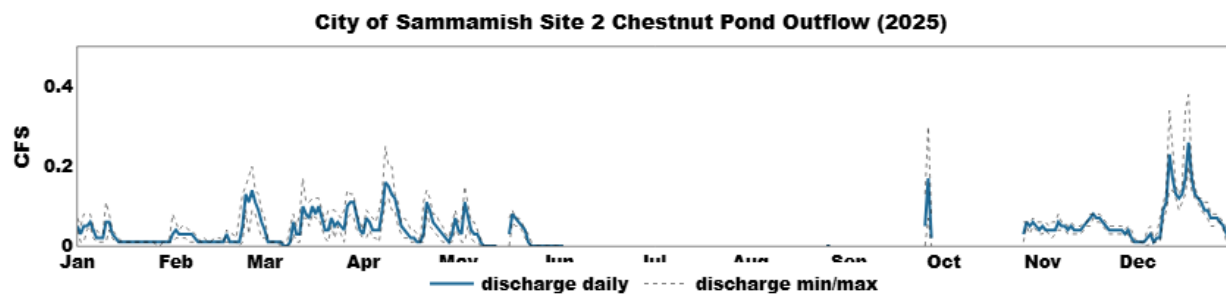
Stormwater outfall flow, temperature, and turbidity continued to be monitored to detect potential impacts to habitat in Ebright Creek. Wetland water level was monitored to detect hydrologic impacts on the wetlands themselves. Flow, temperature, and water level were monitored using continuous gages, and turbidity was measured each month in grab samples.

Outflows

Gages on the outfalls continued to be monitored throughout 2025.

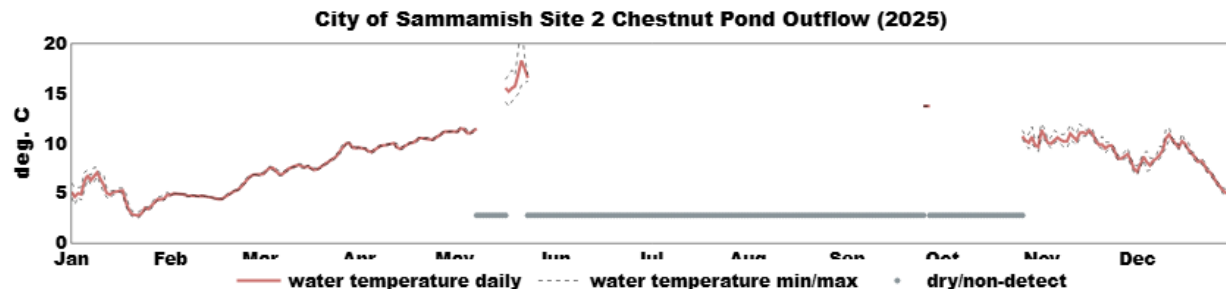
Chestnut Pond

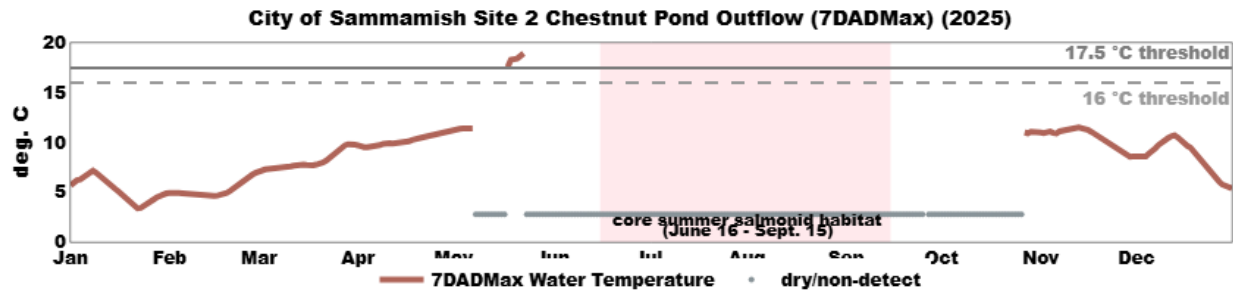
Discharge



Water Temperature

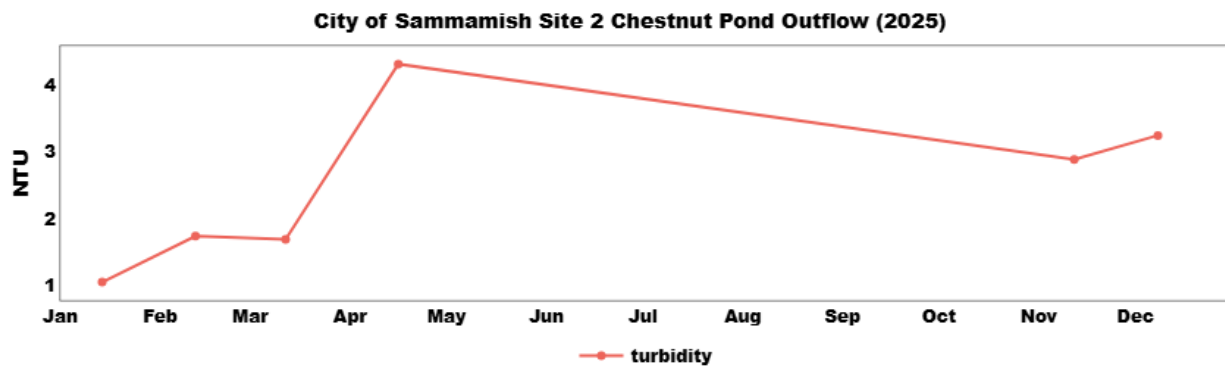
Good water conditions for salmon survival include temperatures cooler than 17.5 °C throughout the year and temperatures cooler than 16 °C during the core rearing and migration period (June 16 - Sept 15). Stream water temperature for salmonid health is regulated by WAC 173 201-A; and is reported as the 7-DADMax temperature





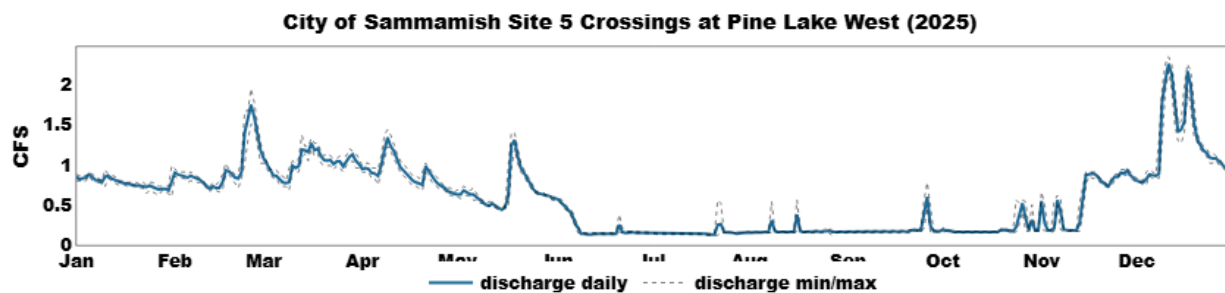
Turbidity

Stormwater outfalls were visited each month. Unless the outfall was dry, samples were collected for laboratory turbidity analysis. Turbidity was low in all samples in 2025. Note that these samples were collected only once per month and would not necessarily catch brief periods of high turbidity during storms.



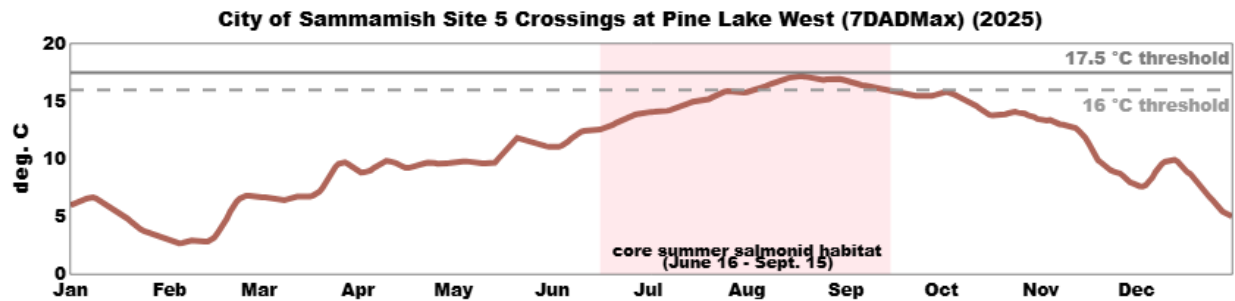
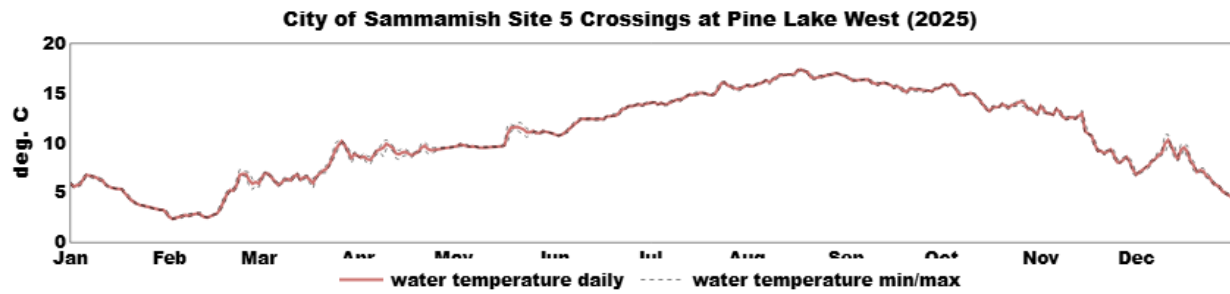
Crossings - West Wetland

Discharge



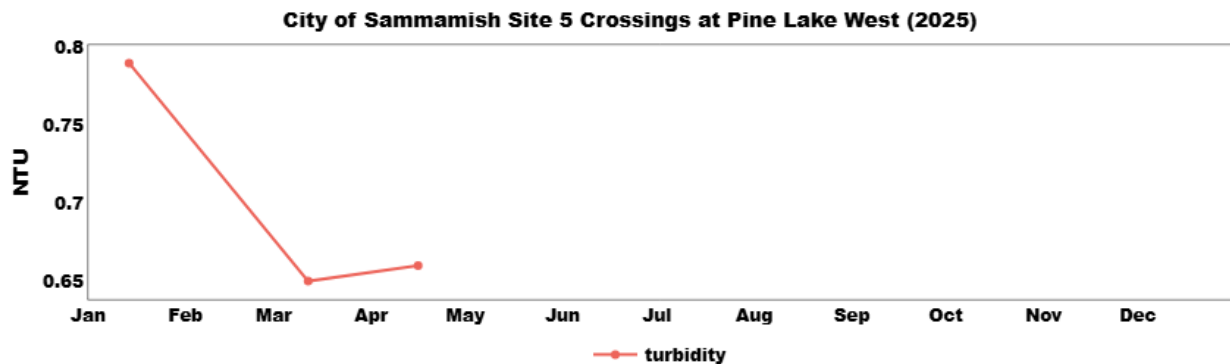
Water Temperature

Good water conditions for salmon survival include temperatures cooler than 17.5 °C throughout the year and temperatures cooler than 16 °C during the core rearing and migration period (June 16 - Sept 15). Stream water temperature for salmonid health is regulated by WAC 173 201-A; and is reported as the 7-DADMax temperature



Turbidity

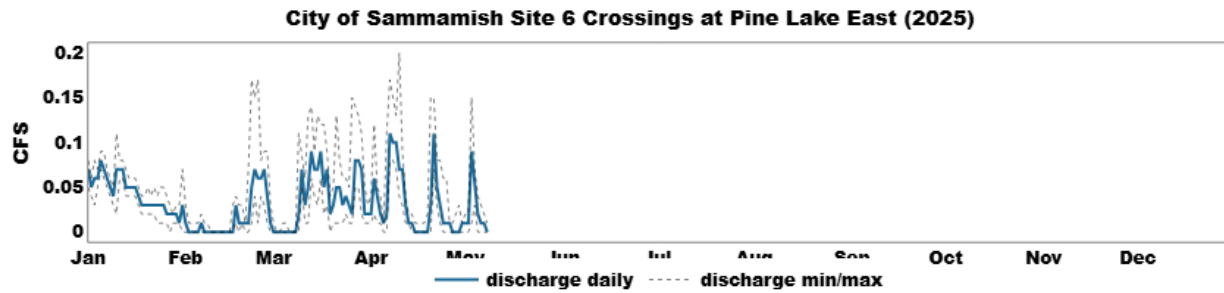
Stormwater outfalls were visited each month. Unless the outfall was dry, samples were collected for laboratory turbidity analysis. Turbidity was low in all samples in 2025. Note that these samples were collected only once per month and would not necessarily catch brief periods of high turbidity during storms.



Crossings - East Pond

Water level and discharge data from May - December 2025 are currently unavailable due to a logger malfunction. Over several sessions the logger produced water level data which initially appeared correct; but was clearly invalid upon quality control. The logger reported valid temperature data for this time period. This logger has been replaced, and King County Science is working to restore these data.

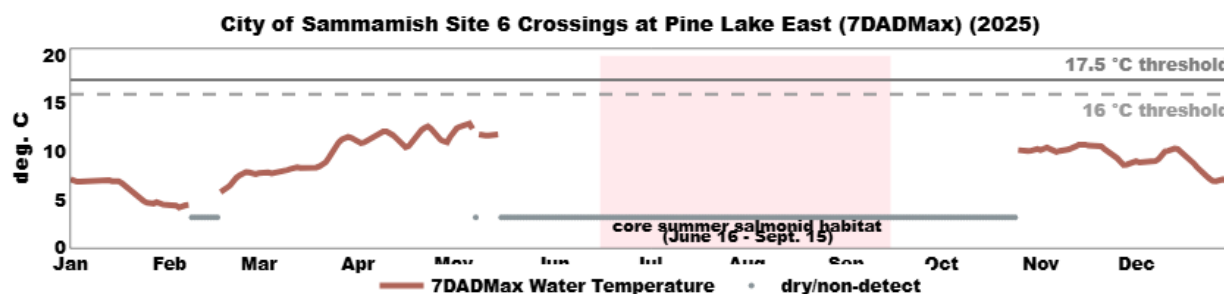
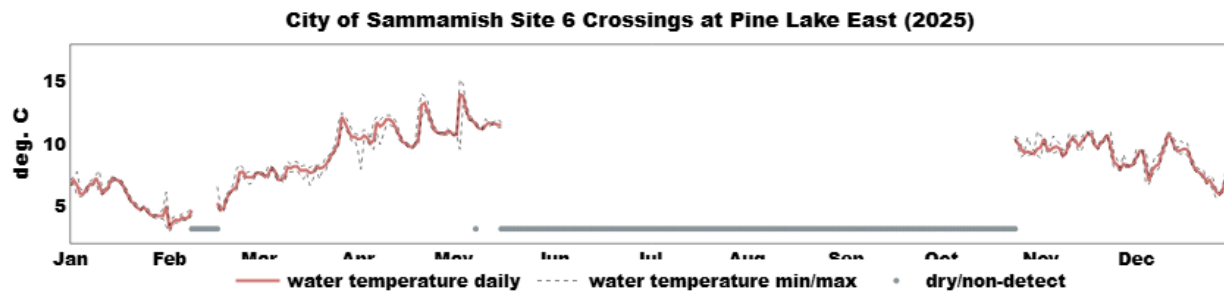
Discharge



Water Temperature

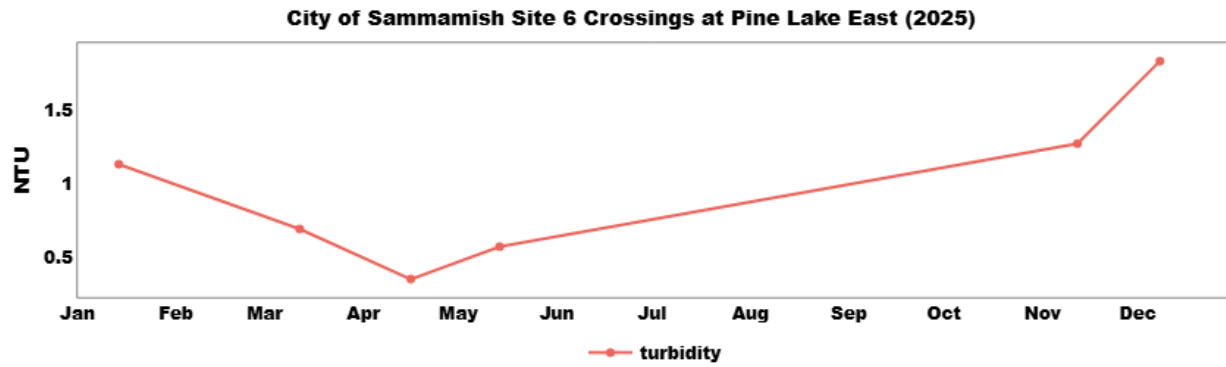
Good water conditions for salmon survival include temperatures cooler than 17.5 °C throughout the year and temperatures cooler than 16 °C during the core rearing and migration period (June 16 - Sept 15). Stream water temperature for salmonid health is regulated by WAC 173 201-A; and is reported as the 7-DADMax temperature

While not a salmon bearing system, this stormwater outfall does feed downstream salmon habitat.

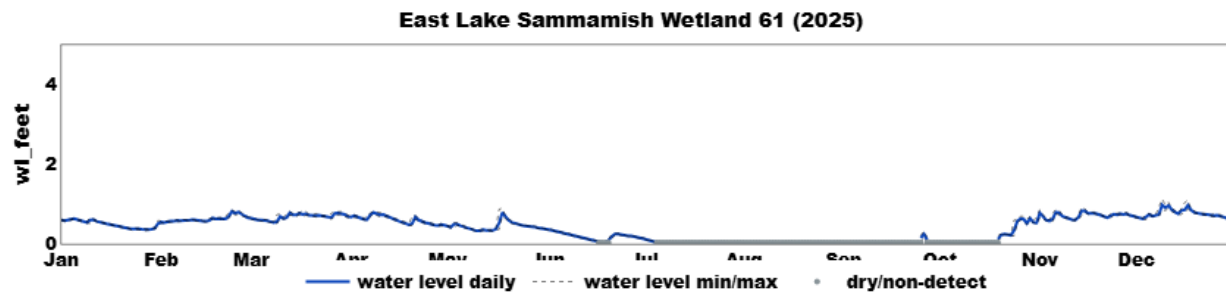
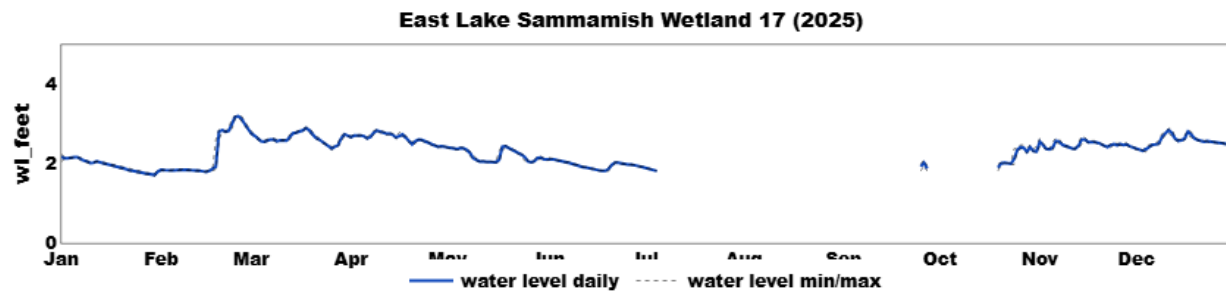


Turbidity

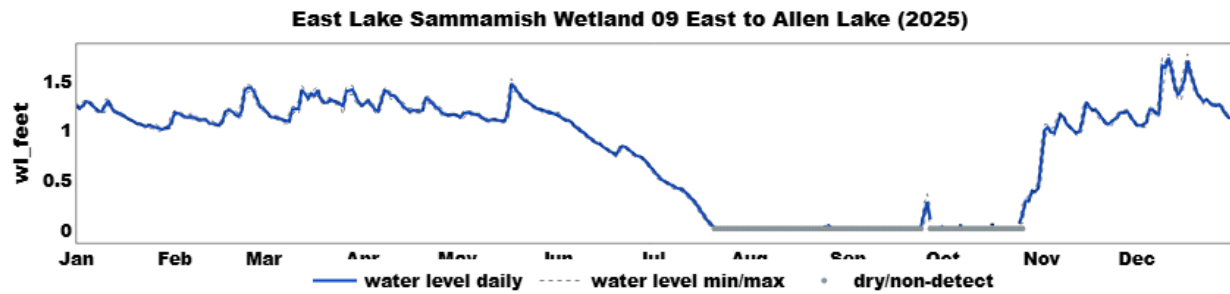
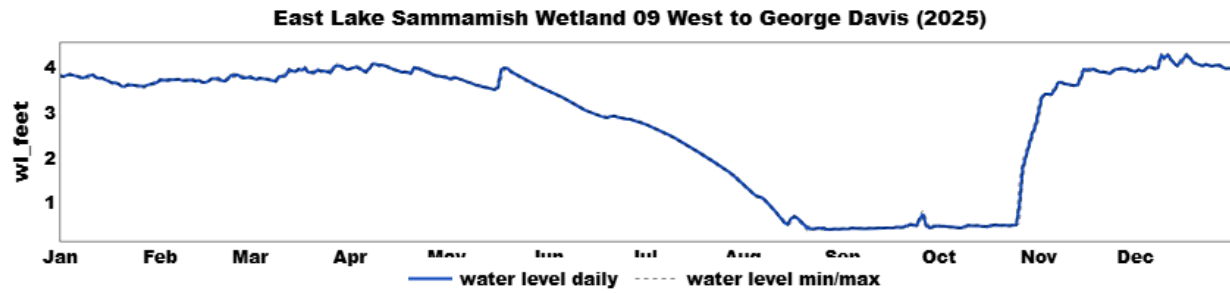
Stormwater outfalls were visited each month. Unless the outfall was dry, samples were collected for laboratory turbidity analysis. Turbidity was low in all samples in 2025. Note that these samples were collected only once per month and would not necessarily catch brief periods of high turbidity during storms.



Wetland Water Level



George Davis / Allen Lake Wetlands



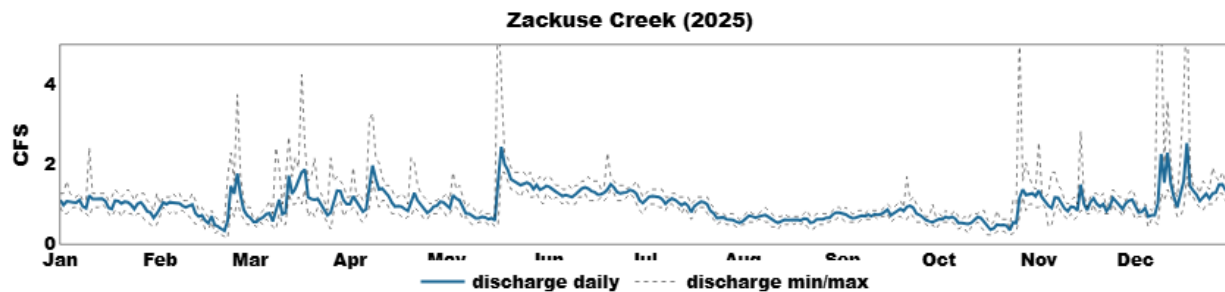
Zackuse Creek

Zackuse Creek was monitored each month for bacteria, nutrients, and conventionals (conductivity, pH, and alkalinity). In addition, a gage measured streamflow and temperature continuously. Zackuse Creek has been monitored annually for stream health by measuring benthic macroinvertebrate (“stream bug”) diversity.

Starting in 2023, a second gage measured water level at the East Lake Sammamish Parkway culvert.

Streamflow

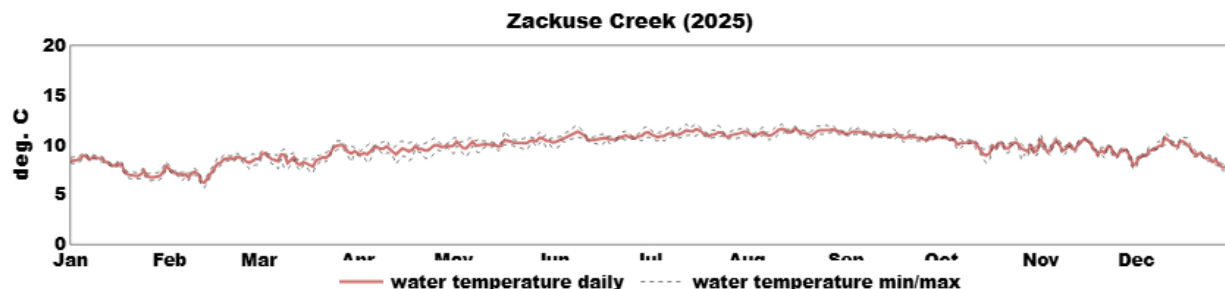
A gage on Zackuse Creek measured streamflow and temperature continuously throughout the year.

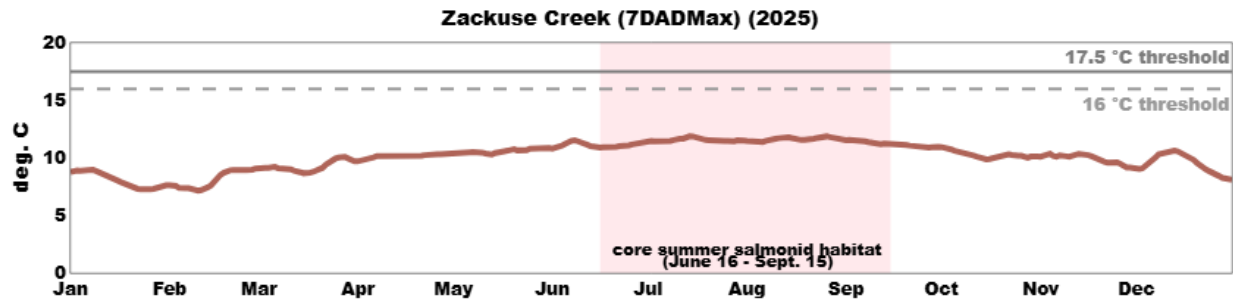


Water Temperature

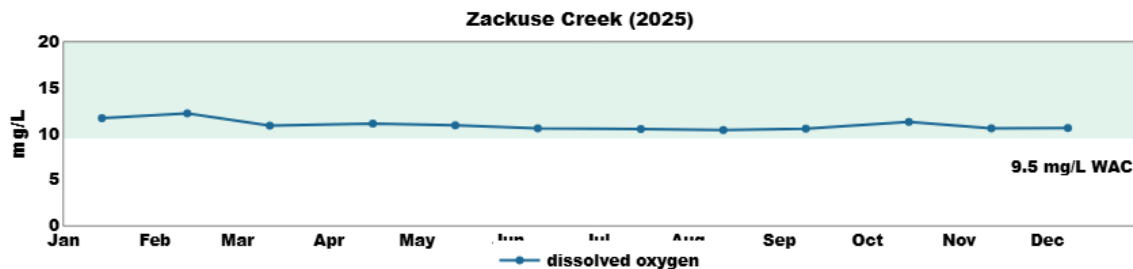
Good water conditions for salmon survival include temperatures cooler than 17.5 °C throughout the year and temperatures cooler than 16 °C during the core rearing and migration period (June 16 - Sept 15). Stream water temperature for salmonid health is regulated by WAC 173 201-A; and is reported as the 7-DADMax temperature

Zackuse Creek stayed cool and well-oxygenated throughout the year.



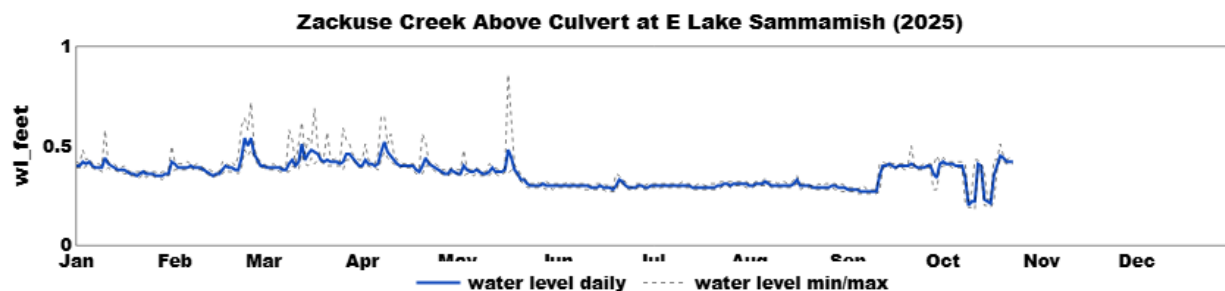


Dissolved Oxygen



Culvert Water Level

In 2023, we added a water-level gage at the culvert under East Lake Sammamish Parkway. This site is not suitable for good streamflow measurements, so we have not converted water level into streamflow. Instead, this gage focuses on understanding how the stream and culvert respond to large rainstorms, which can deposit substantial amounts of gravel and sediment in and near the culvert.



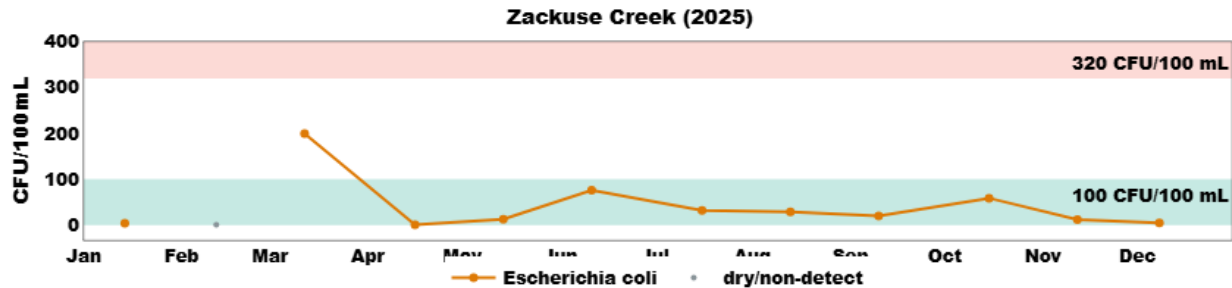
Biotic Stream Health

As an overall measure of stream health, Zackuse Creek was sampled once during the summer for benthic macroinvertebrate ("stream bug") diversity.

pugetsoundstreambenthos.org/Biotic-Integrity-Scores.aspx?k=ZAK

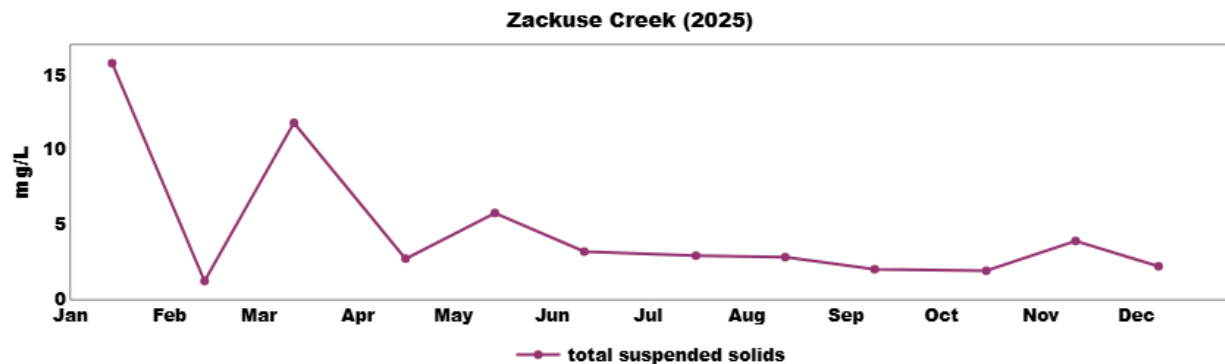
Bacteria

To meet Washington's recreational water-quality criteria, streams should average less than 100 CFU/100 mL of *E. coli* bacteria with no more than 10% of samples above 320 CFU/100 mL. Zackuse Creek met this goal in 2025, and most samples had relatively low bacteria concentrations, with the mean falling below 100 CFU/100 mL.



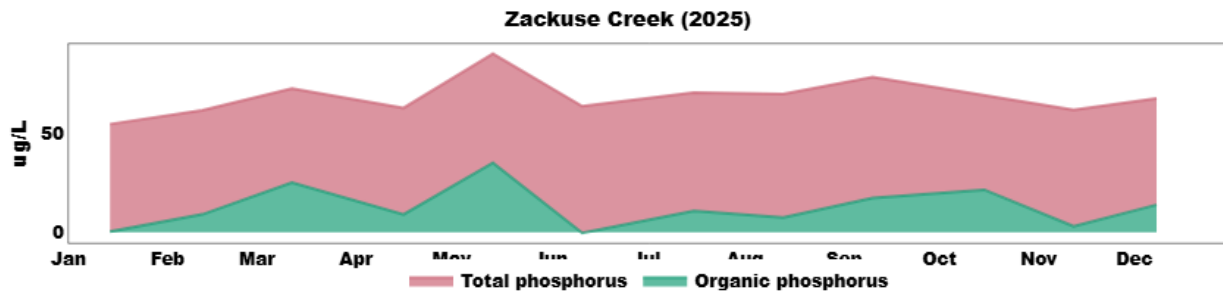
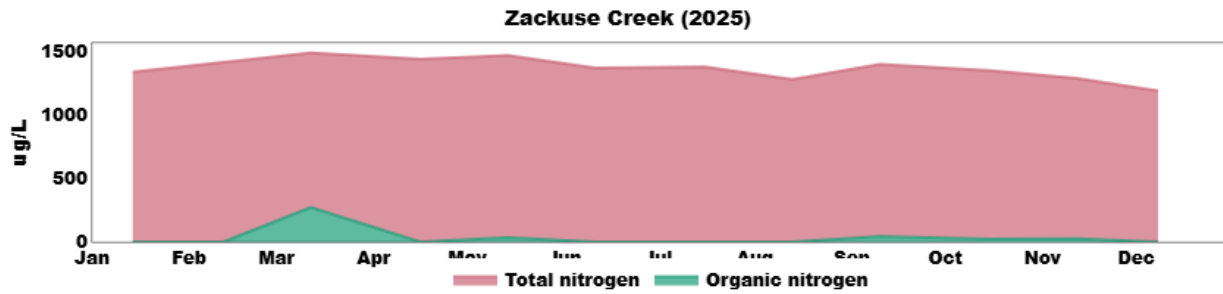
Suspended Sediment

Sediment in the water was measured two ways: as the mass of total suspended solids (TSS), and as turbidity (an optical measurement). In 2025, suspended sediment values were reasonably low in Zackuse Creek. Note that these samples were collected only once per month and would not necessarily catch brief periods of high sediment during high-flow events.



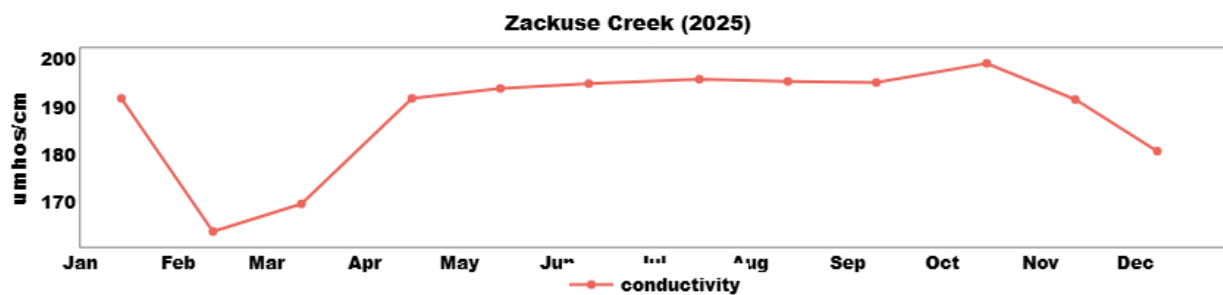
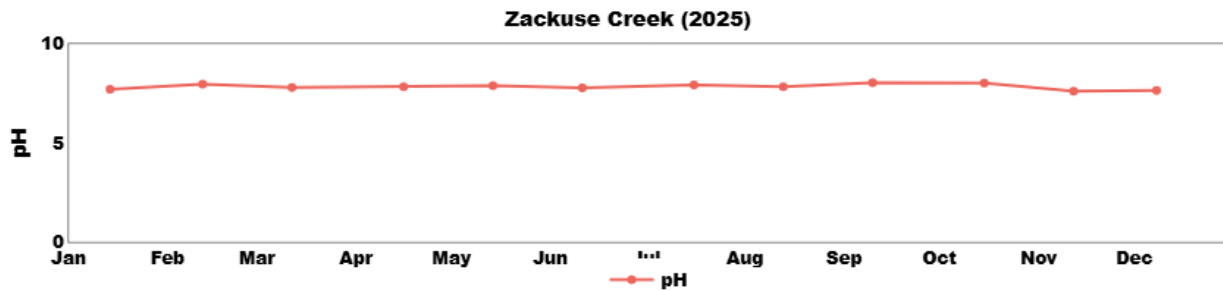
Nutrients

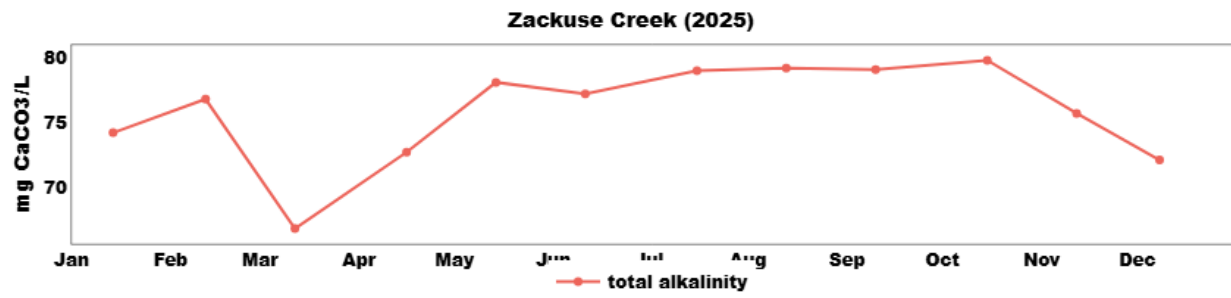
The following graphs show nitrogen and phosphorus concentrations, split out into two fractions: dissolved inorganic, and organic plus particulate. The dissolved-inorganic fraction can be taken up and used more readily by algae (many organic and particulate forms need to be decomposed first). These are stacked-area graphs; the total height of the colored area is the total concentration.



Conventionals

In 2025, Zackuse Creek continued to have fairly high nutrient concentrations. This is typical of streams in Sammamish and is not unique to Zackuse. Continuing to reduce nutrient inputs to these streams, especially phosphorus, would likely benefit Lake Sammamish. Lake Sammamish, designated a Water of Statewide Significance, has had a Lake Management Plan in place since 1994 to reduce phosphorus.



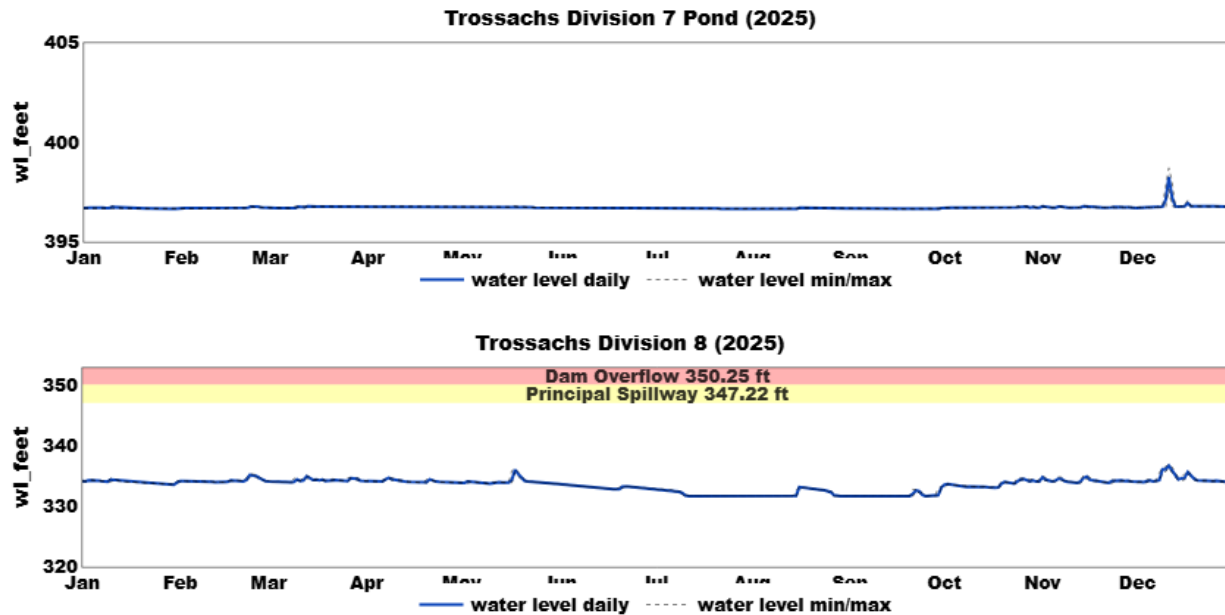


Stormwater Pond Dam Safety

In 2023, we installed gages with real-time alerts at three high-priority stormwater ponds. Ecology's Dam Safety Office requires these to track water elevations and outflows and help maintain dam operation and safety, especially during large rainstorms.

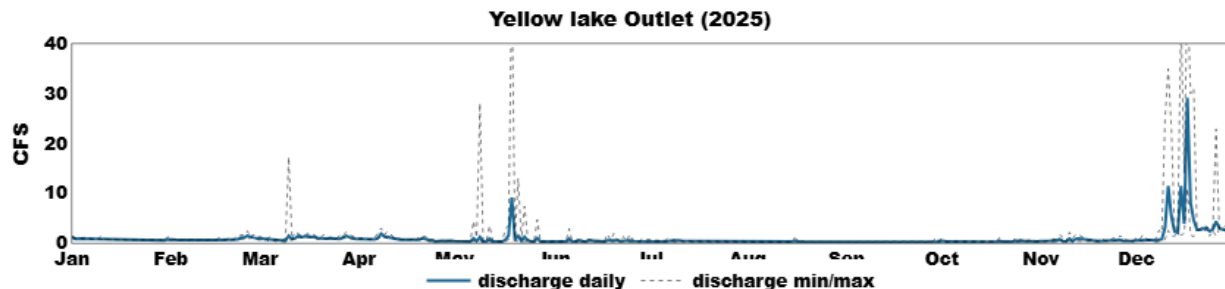
Trossachs

At the Trossachs Div 7 and 8 ponds, data are given as water level (ft above sea level).



Yellow Lake

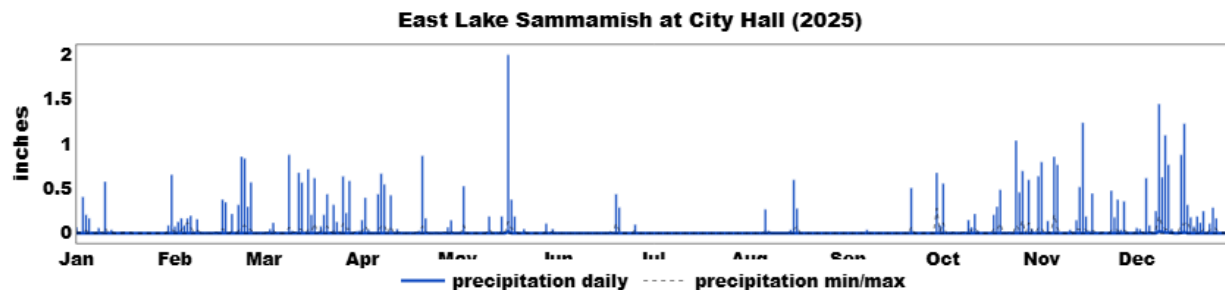
At the Yellow Lake outlet, data are given as flow (cfs).



Precipitation

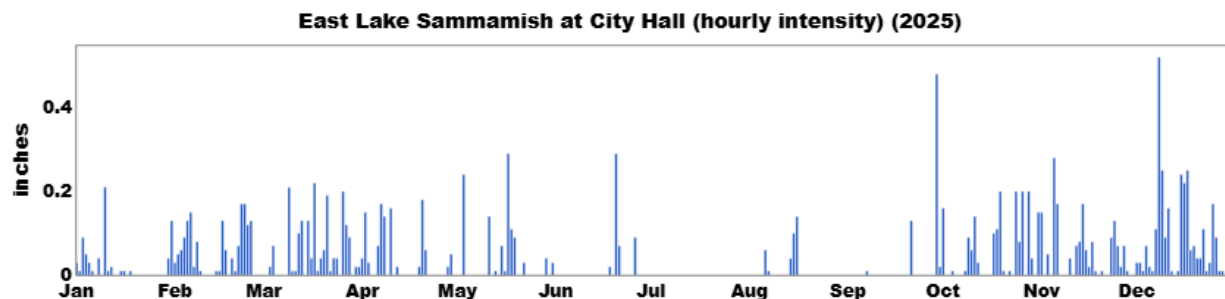
Precipitation (rain and snow) was measured by the rain gage on top of Sammamish City Hall. The gage is a tipping bucket rain gage that measures precipitation in 5 minute intervals. The data are reported as daily totals, and the daily maximum and minimum are also reported.

Daily Totals



Precipitation Intensity

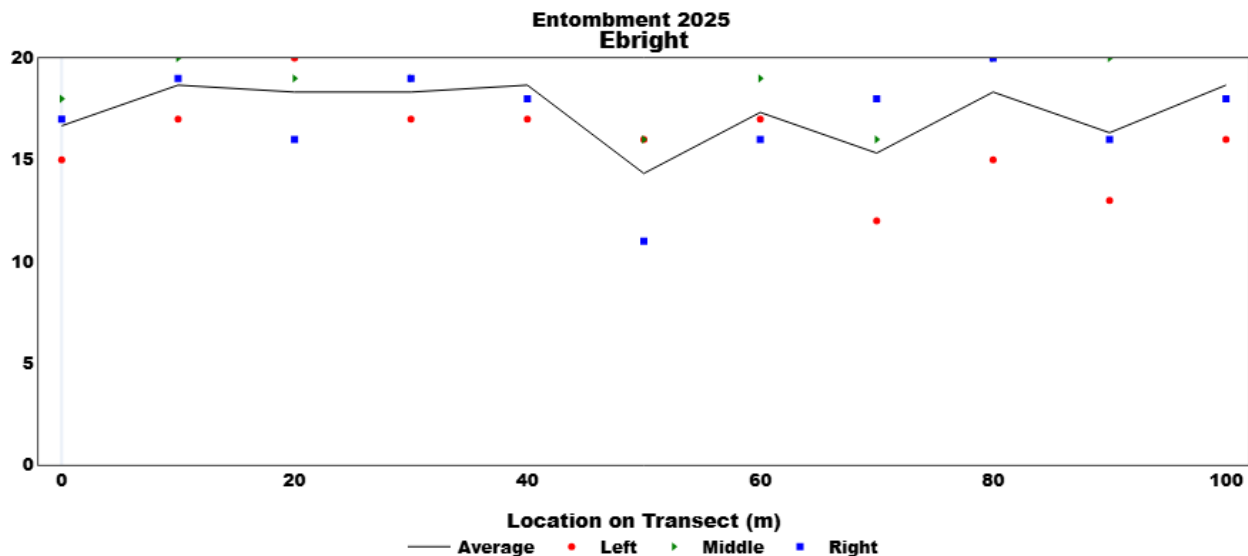
In addition to the total amount of precipitation during a rain or snow event, the precipitation intensity (inches per hour) also affects runoff, erosion, and other processes. As a measure of intensity, this graph shows each day's maximum hourly precipitation.



Entombment Monitoring 2025

In early June 2025, we assessed the streambed along a 100-m transect Ebright Creek. The transects were located at the bottom of the Sammamish Plateau, where the stream flattens out and slows down. This is where the stream is most likely to drop fine sediment that can cap and entomb gravel spawning beds. Endombment monitoring for Zackuse Creek, George Davis and Pine Lake Creek was discontinued after 2024.

Every 10 meters along the transect, we measured the substrate score in three quadrats in the left, middle, and right of the stream channel (L, M, R in the following graph). The following graph shows the results for 2023, with the black line showing the average substrate score for each location along the transect. Locations go from the downstream end (0 meters) to the upstream end (100 meters) of the transect. Lower substrate scores indicate finer substrates and/or more embeddedness, which are likely to negatively impact salmonid spawning beds.



There was normal variability among quadrats and locations; no stream reaches stood out as having substantially higher or lower substrate scores than other parts of the stream.

