

Focus on: Soos Creek Temperature, Dissolved Oxygen, and Bacteria Study



Big Soos Creek

Areas of the Soos Creek watershed don't meet Washington State water quality standards for temperature, dissolved oxygen (DO), or bacterial pollution. We're developing a water quality improvement project (often called a TMDL) to restore and improve conditions for aquatic life and for people who swim, fish, or otherwise recreate in this watershed.

From April 2023 to April 2024, we'll collect information on the quality of the water, amount of flow, and biological growth in the water, as well as other attributes related to the land, vegetation, and groundwater interaction. We'll use the information to create a linked network of computer models that simulate water movement and quality through the land and in the streams. We'll also test management scenarios in the model to develop pollution limits.

What we plan to do this year

Our main goals are to:

- Confirm, characterize, and address temperature, DO, and bacteria problems in the Soos Creek watershed.

- Use a modeling framework and field data to predict the magnitude of pollution sources and the effects of source reduction and other management actions.
- Investigate, characterize, and estimate the historic, current, and potential future conditions of the watershed as these conditions relate to in-stream temperature, DO, and bacteria.
- Define human-caused versus natural influences on temperature and DO in the watershed.

Study objectives

- Determine bacteria and nutrient levels and loads from major tributaries, point sources, and stormwater drainages within the Soos Creek watershed under different seasonal and hydrological conditions.
- Characterize channel geometry and riparian vegetation.
- Identify areas of potential cold-water refuge for fish and measure temperature differences between refuge (e.g., side channel) and mainstem.



Map of Big Soos Creek (King County)

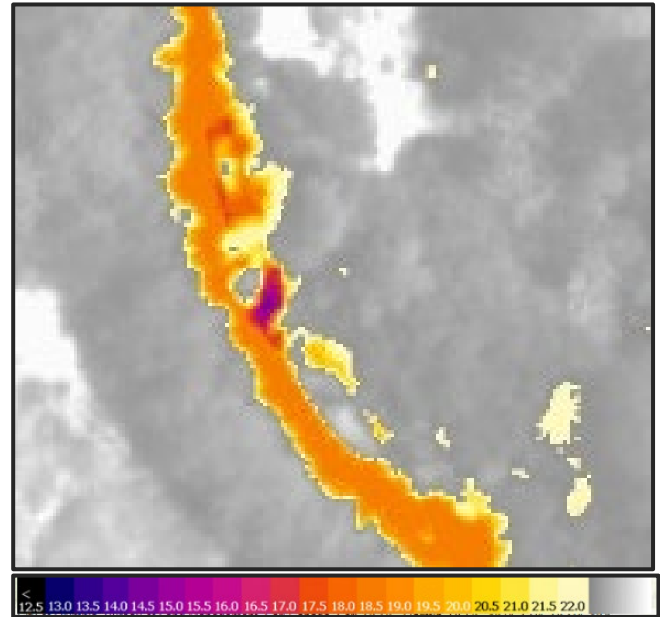
Field data collection

We'll collect field data for at least one year, from April 2023 to April 2024. If conditions during this period don't represent critical conditions, we may extend data collection. This could involve:

- **Riparian habitat and stream-channel surveys:** We'll conduct one to three surveys during summer 2023 along the portion of Big Soos Creek within the parcel, in order to measure channel geometry, characterize near-stream vegetation, and collect shade data.
- **Thermal drone imagery:** To identify areas where groundwater is seeping into the creek and where cool, resting places exist for salmon, in summer 2023, we'll fly a drone equipped with a thermal camera over public parcels and some private parcels along Big Soos Creek. Images will focus on the creek channel and immediate vegetation on either side. We'll avoid capturing images of private structures or areas outside of the creek channel and banks. We'll permanently delete images that contain anything other than the creek channel and bank vegetation. For more on our drone policy, see the link to the right.
- **Groundwater monitoring:** Collaborating with the United States Geological Survey (USGS), we'll monitor watershed groundwater sources. USGS staff are looking for locations to install temperature profile rods in the stream bed to collect (1) continuous temperature data, (2) nutrient samples, and (3) discrete water quality measurements from groundwater sources. Only a limited number of in-stream sampling wells will be installed.

If you're a local resident and want to learn more about groundwater quality on your property, please let us know.

Our quality-assurance project plan will be available, when published, at ecology.wa.gov/Soos-creek-pubs.



Example of a thermal image of a creek

Related information

- Soos Creek multiparameter TMDL — ecology.wa.gov/Soos-Creek
- Unmanned aerial systems (drones) — ecology.wa.gov/Drones-UAS

Contact information

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ADA accessibility

To request an ADA accommodation, visit <https://ecology.wa.gov/accessibility>. For Relay Service or TTY call 711 or 877-833-6341.