

Oregon Statewide Recharge Study

Update: January 2026

Description of the Study:

In 2021 (through [HB 2018](#)) the Oregon legislature directed OWRD to partner with the U.S. Geological Survey USGS on a Statewide Recharge Study to provide stronger groundwater recharge estimates statewide. OWRD and USGS have been working closely together since that time to develop technical tools and data that will inform groundwater budget information across the state. These formative investigations will be completed in 2028.

The recharge study has three major components:

- **Improving baseflow estimates** for streams across Oregon.
- **Conceptual groundwater budgets for major hydrologic basins in Oregon.**
- Building and calibrating the **Oregon Hydrologic Model**, a customization of the USGS' National Hydrologic Model (NHM).

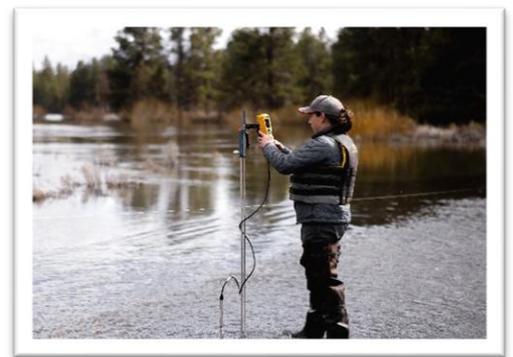
This summary provides updates on the work underway as a part of the Statewide Recharge Study and will be updated twice annually until the project is complete.

The Work Underway:

1. Improving baseflow estimates:

The sustained flow between storms and during the dry season is called “baseflow.” Baseflow is typically considered to be from groundwater discharge to streams (as opposed to surface runoff). Baseflow can be used to better understand groundwater and to infer recharge to aquifers connected to the stream. Two data sets are contributing significantly to improving baseflow estimates:

- **Stream gage data** - OWRD and other natural resource agencies manage stream gages that continuously measure the amount of water that flows in streams across the state. To help calibrate the Oregon Hydrologic Model and to better understand groundwater discharge statewide, the USGS completed preliminary estimates of available baseflow from stream gage data statewide using a suite of methods that rely on the shape of the hydrograph to separate surface flow from baseflow. The results were published in 2025.
- **Specific conductance data** - Specific conductance quantifies how well water conducts electricity, which is directly related to the presence of dissolved ions such as salts and other inorganic compounds. The more ions present in the water, the higher the specific conductance. Water with higher specific conductance is an indication of higher amounts of groundwater (baseflow) than a stream with lower specific conductance and is another way to estimate baseflow.



*OWRD field staff use a flow tracker to verify stream gage data; Sprague River, Klamath County, OR.
Photo credit: Garrett Steensland*

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Between 2021 – 2025, OWRD and USGS staff collected nearly 10,000 samples from streams all around Oregon. These samples will be used to help refine the initial baseflow estimates from gages statewide, particularly in areas that receive a large snowpack. This is one of the next phases of the study. For more information, see the Baseflow Fact Sheet below.

2. Conceptual Groundwater Budgets - USGS is developing partially quantified, conceptual budgets of groundwater using estimates of groundwater budget components from previous studies, the newly developed baseflow estimates, remote-sensed datasets, and hydrogeologic knowledge of each basin. These conceptual water budgets will help OWRD communicate a more detailed understanding of its basins to residents of each basin, and prioritize needs for potential future study. USGS expects to publish a report on the conceptual groundwater budgets in late 2026.

3. The Oregon Hydrologic Model – USGS is developing the Oregon Hydrologic Model to estimate recharge in basins across the state. It is a customization of the [National Hydrologic Model](#) (NHM), a national-scale application of the Precipitation Runoff Modeling System (PRMS). PRMS uses daily precipitation, air temperature, and the hydrogeologic properties of the landscape to estimate surface runoff, streamflow, and groundwater discharge to streams, among other components of the hydrologic cycle. The model will be calibrated using baseflow estimates across Oregon. Recharge estimates from the model will be compared to the available estimates in the conceptual groundwater budgets to develop more complete or refined estimates of the groundwater budget for each administrative basin in Oregon. USGS expects to report on the model results by 2028.

Tools and Information Now Available:

- USGS published a [data release](#) with initial estimates of baseflow in 2025.
- For more information about what baseflow is, how it varies across the state, and how the specific conductance data will be used to refine the initial baseflow estimates, OWRD has developed a [Baseflow Fact Sheet](#).
- In 2024, the USGS developed an informational [storymap](#), which provides an overview of this developing work in Oregon.



*Chewaucan River, Lake County OR
Photo credit: Garrett Steensland*

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Note: This summary will be updated twice a year until the development of Water Use tools funded by HB2018 and HB 2010 is complete, which is likely through 2028.