

Water Quality Monitoring Programs at Oregon DEQ

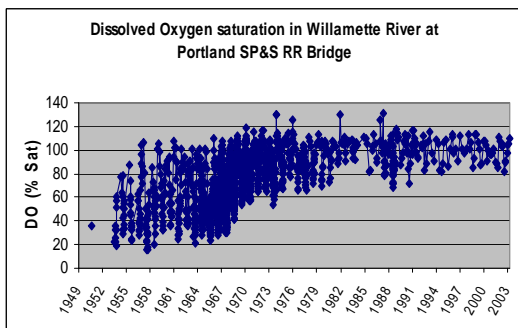
Background

The Laboratory and Environmental Assessment Division (LEAD) provides environmental information necessary to support DEQ's mission to restore, maintain and enhance the quality of Oregon's air, land and water. Water monitoring staff work with chemists and data managers to produce information needed to assess and describe the quality of Oregon's streams, lakes, coastal waters and groundwater resources. LEAD staff members also gather data to characterize pollution sources and develop water quality restoration and protection strategies.

Trend and assessment monitoring

For decades DEQ has produced water quality information about Oregon's rivers and streams through its long-term water quality monitoring program. Monitoring staff collect data six times a year at 144 fixed sites throughout the state. These data are used to identify water quality problems and document the success of water pollution control programs.

For example, the graph below illustrates improvements in levels of dissolved oxygen necessary for healthy aquatic life in the lower Willamette River. At one time pollution in the river consumed oxygen to levels that were harmful or even lethal to fish. Four decades of monitoring has demonstrated the success of pollution control efforts to restore oxygen levels in the Willamette to those that are safer for fish and aquatic insects.



Monitoring staff use data collected at randomly selected sites to make statistically valid estimates about the physical, chemical and biological conditions of Oregon's waters. DEQ compares data from randomly selected sites with data from selected reference sites to characterize the extent and relative risk of water pollutants and habitat

degradation to biological communities. DEQ uses this approach to assess habitat and water quality in rivers and streams and to evaluate watershed restoration efforts.



Monitoring staff from LEAD's Watershed Assessment Section collect stream habitat measurements.

Providing data to improve water quality

When water quality does not meet Oregon's standards, monitoring staff provides much of the data used to develop the clean water plans known as Total Maximum Daily Loads (TMDLs). Water quality, stream flow and other environmental data are used to identify pollutant reductions necessary to meet water quality standards and protect drinking water supplies, recreation and fisheries.

Monitoring staff also work on groundwater protection. Routine monitoring is conducted in two groundwater management areas in Eastern Oregon and one in the Southern Willamette Valley. Monitoring data helps DEQ understand the effectiveness of voluntary "best management practices" adopted in these areas to improve groundwater quality. Staff members also monitor landfills throughout Oregon to ensure that pollution control measures are sufficient to protect valuable groundwater resources.

LEAD staff members support volunteer watershed council monitoring efforts and ensure that data collected by watershed councils and others meet DEQ data quality requirements. Staff members also educate and train volunteers in monitoring protocol, provide monitoring equipment, and assist with writing monitoring plans. The data collected by volunteers guide local restoration efforts and are used by DEQ for development of Oregon's biennial integrated report on water quality and in establishing TMDLs. Since 1997 volunteers have collected



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basic water quality data at thousands of locations around the state.



A water quality monitoring specialist collects a pesticide sample from a Northern Malheur County Groundwater Management Area well spigot.

Protecting human health and the environment

Water quality monitoring work helps protect public health and the environment in a variety of ways.

1. DEQ staff sample water quality at popular beaches along the entire Oregon Coast. During 2006, staff collected more than 1,300 bacteria samples from 26 beaches. The Oregon Department of Human Services uses the data to warn beach visitors when bacteria counts exceed safe levels for swimming or surfing at a particular location.

2. Since 1999, the Pesticide Stewardship Partnership program has used data collected by water monitoring staff. Local stakeholders and DEQ staff collaborate to collect stream samples

from five watersheds during pesticide application periods. Samples are analyzed by DEQ chemists and the information is used to guide local development of pesticide best management practices.

3. DEQ has started a long-term toxics monitoring program to assess toxic pollutants in water and fish. In 2008, DEQ began monitoring toxic pollutants in the Willamette River Basin. DEQ will rotate this work to other basins around the state once work is completed in the Willamette. Results from this work will be available on DEQ's Web site in 2009.

4. Monitoring staff also conduct field investigations to assess impacts of DEQ-permitted wastewater discharges on stream quality. This work includes reviewing toxicity test results to ensure that wastewaters from industrial and municipal sources are not toxic to aquatic life. Additionally, monitoring staff provide DEQ permit writers information necessary to develop permits that protect the quality and beneficial uses of Oregon's waters.

For more information

This is a brief summary of the water quality monitoring activities in the Watershed Assessment and Water Quality Monitoring Sections at DEQ's Laboratory and Environmental Assessment Division. For more information about monitoring at DEQ visit our Web page at:

www.deq.state.or.us/lab/wqm/watershed.htm

Alternative formats

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