Water Quality in the Lower Deschutes River

The Lower Deschutes River supports many important uses, including recreation, fish and wildlife habitat, hydropower, and water supplies for irrigation, domestic, and industrial uses. The river and surrounding watershed are also culturally and spiritually important to many. Here are some common questions DEQ receives about water quality and the agency's role in regulating conditions in the Lower Deschutes.

How is water quality in the Lower Deschutes River?

Water quality in the Lower Deschutes River reflects influences of human sources of pollution and natural processes. During certain periods of the year, some sections of the river have high temperatures or pH, and low dissolved oxygen levels that can harm fish. Nutrient levels, especially phosphorous and nitrogen, are also high in some locations and can fuel high growth of algae that may be harmful to humans and aquatic life.

Water quality is showing improvement in some areas. DEQ's analyses of data collected between 2000 and 2020 shows improvement in dissolved oxygen levels at three locations along the lower river. In the lowest reach, from Buck Hollow Creek to the mouth of the river, dissolved oxygen levels meet Oregon's state standards for water quality.

Improving water quality is challenging when there are many sources of pollution. There is no quick fix for this complex issue, and managing many sources of pollution may be needed to make progress toward better water quality in the river. Pollution entering surface waters in the upper parts of the basin may contribute to measurable levels of pollutants downstream.

In 2019, DEQ began monitoring water quality to develop Total Maximum Daily Loads, or clean water plans, for the rivers and streams in upper areas of the Deschutes River basin. Find out more about TMDLs in the Deschutes Basin.

What are the sources of pollutants?

Human caused sources of pollution include domestic and industrial wastewater, confined animal feeding operations, mining activities, runoff from agricultural, forestry and urban management practices (including stormwater and construction), recreational activities, reservoirs and diversions, roads and highways, invasive species, and others.

Natural processes also impact water quality. A common source of natural phosphorus in the basin is the weathering of volcanic rock. Climate change also alters timing and amounts of precipitation, leads to higher seasonal water temperatures, and worsens drought.

Why are water temperature patterns in the Lower Deschutes River different in recent years?

Prior to 2010, water could only be drawn from the bottom of Lake Billy Chinook, resulting in colder water in the lower river and delayed seasonal warming that would not naturally occur in the river if the dams were not present. A selective withdrawal facility was constructed at the Pelton Round Butte Hydroelectric Project as the principal Protection, Mitigation, and Enhancement Measure to mitigate for impacts on designated beneficial uses and water quality generally, including but not limited to temperature, dissolved oxygen, and pH.

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800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

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Operations at this facility allow surface and bottom water to be blended so that discharge from the dams more closely resembles river temperatures that would occur if the dams were not there. Importantly, surface flows also allow for the collection and passage of migratory fish.

What is DEQ doing about water quality influences from dams?

DEQ issues water quality certifications to new or amended federal licenses for hydropower projects to ensure protection of water quality. Before issuing a certification, DEQ conducts a thorough review, including assessment of the proposed project activities, potential effects on water quality, water quality standards, and other requirements of state and federal law. Certifications include conditions that require management, monitoring, and reporting to protect water quality. DEQ makes draft certifications available for public to provide input and feedback on proposed requirements. Once issued, DEQ staff oversee implementation of the certificate to ensure conditions are met. Find out more about licensed Oregon hydroelectric projects.

How long does a hydroelectric water quality certification last?

DEQ's water quality certification becomes a part of the federal license for the hydroelectric project at license issuance, renewal, or amendment and is effective for the entire term of the federal license. During the license term, a certification may be modified or terminated if water quality regulations or requirements are updated, project activities or waterbody conditions change significantly, or conditions are violated.

In 2002, DEQ issued a certification to Portland General Electric (PGE) and the Confederated Tribes of Warm Springs, co-owners and license holders for the Pelton Round Butte hydroelectric project. That certification has been incorporated into the federal license and remains in effect until 2055.

Is DEQ considering changes to the certification?

DEQ works with state and federal agencies, the Confederated Tribes of Warm Springs, and PGE regarding implementation of the water quality certification for Pelton Round Butte Project. The certification requires mitigation and management strategies to achieve temperature, dissolved oxygen, and pH goals that are based on Oregon's water quality standards, including adaptive management of water withdrawal to meet water quality standards and fish passage needs.

Currently, DEQ is assessing the certification and associated plans, water quality standards, studies, reports, and data to determine if conditions of the certificate are sufficiently protective of water quality. DEQ's is also reviewing pathways within the existing certification that may be used to refine water quality management now. Some conditions of the certification include adaptive management of operations over time, providing a path for operations to benefit from lessons learned and findings from new studies.

DEQ will make a report of review findings available when the assessment is complete to clarify current management and ongoing oversight of the certification. If changes need to be made to the certification conditions to protect water quality, either as a result of the review or as a result of future processes, DEQ will provide information about proposed changes to the certification and provide opportunities for public input.

DEQ Section 401 Hydropower Contacts

Theresa Burcsu
401 Program Manager
Theresa.Burcsu@deq.oregon.gov

Valerie Thompson
Hydro Program Coordinator
Valerie.Thompson@deq.oregon.gov

Vanessa Rose
401 Certification and Hydro Specialist
Vanessa.Rose@deq.oregon.gov

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