

Water Quality on the Deschutes River

The Pelton Round Butte Hydroelectric Project – a complex of three dams on the Deschutes River in central Oregon – was constructed between 1957 and 1964 by Portland General Electric. The Confederated Tribes of the Warm Springs Reservation of Oregon installed a powerhouse at the dam located farthest downstream in 1981. CTWS then joined PGE as a co-owner of the full project in 2002, purchasing a one-third interest and the right to one-third of its energy output.

Relicensing: A collaborative effort

In the late 1990s, PGE began working with the CTWS and a diverse group of stakeholders to prepare for project relicensing through the Federal Energy Regulatory Commission. In 2004, representatives of 22 government and non-government organizations with interests, responsibilities and expertise on the impact of the hydro project on the Deschutes River basin negotiated and signed a comprehensive relicensing agreement.

Based on that relicensing agreement, FERC then issued a new, 50-year operating license for the project to PGE and the CTWS in 2005. License requirements include specific measures to restore fish passage and manage water quality at the project outflow. The original signatories to the relicensing agreement remain active in helping the co-licensees implement the terms of the new license.

Reviving fish runs and improving water quality

In 2010 PGE and the CTWS completed a first-of-its-kind facility – the Selective Water Withdrawal Tower – designed to allow downstream passage of salmon and steelhead past the project for the first time in more than four decades. All but the surface structure of the 273-foot-tall SWW is submerged in the forebay just above Round Butte Dam.

The SWW has intakes at the surface and bottom of Lake Billy Chinook allowing warmer surface water to be mixed with cooler water from the bottom of the reservoir. This makes it possible for project operators to manage outflow temperatures as required by the Oregon Department of Environmental Quality and the CTWS Water Control Board. The goal is for temperatures to more closely match those that would be expected in the river if the hydro project was not there.



Facts about the Pelton Round Butte Project

- Largest hydroelectric project located entirely within Oregon
- With a combined capacity of 435 megawatts, produces enough power on average to serve about 137,000 homes.
- Only hydroelectric project owned jointly by a Native American tribe and an investor-owned utility
- Certified by the Low Impact Hydropower Institute in 2007 for improvements reducing project impact on the environment

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Surface water is also where migratory fish are found, so passing surface water downstream in the spring is essential for fish passage.

Each year since becoming operational the SWW has successfully passed thousands of migrating juvenile fish downstream. Modest adult returns began in 2012, with natural spawning since documented upstream in the Crooked River, Metolius River and Whychus Creek.

Part of a bigger picture

To achieve the long-term goal of healthy, sustainable and harvestable runs of migratory fish in the upper Deschutes Basin, the fish passage capability provided by the SWW has to be matched with healthy, accessible habitat where salmon and steelhead can safely hatch and rear as juveniles, migrate, and ultimately spawn when they return from the ocean as adults.

To help make this possible, PGE and the CTWS have committed more than \$21 million to help public agencies, conservation organizations, irrigators, private landowners and other stakeholders fund and implement dozens of habitat restoration and fish passage projects on the Deschutes, Crooked and Metolius rivers and their tributaries. This ongoing collaboration is essential when success will be measured in decades, not years. A tremendous amount of work remains.

Shared commitment to good science

Years of careful planning and engineering, based on the best science available, went into development of the SWW and the comprehensive habitat improvement and fish reintroduction effort that it supports. Good science, however, is a continuous process of data collection, analysis, and application. PGE and resource agencies of the CTWS, working with DEQ, the Oregon Department of Fish and Wildlife, and other stakeholders are engaged in continuous, rigorous scientific monitoring of fish passage developments and water quality in and around the Pelton Round Butte project.

In addition to ongoing monitoring, current PGE/CTWS studies include a two-year investigation comparing insect populations above and below the project before and after the SWW became operational and a multi-year study measuring water quality indicators in the project reservoirs and the lower Deschutes. Separately, an ODFW study is



Round Butte Dam fish passage system completed

Watch the dramatic story of how restoration of fish passage at the dam drove – and depends on – myriad habitat improvement projects.

Visit [Youtube.com/PortlandGeneralElec](https://www.youtube.com/PortlandGeneralElec) to watch the full video.



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measuring the growth, diet and health of redband trout in the lower river.

Putting the science to work through adaptive management

PGE, the CTWS and their many partners in restoring historic fish runs and fish habitat in the Deschutes basin are doing cutting-edge work without a manual. Exploring uncharted territory means we have to be prepared to adapt to changing circumstances or unexpected developments along the way.

For example, we've used new data and experience operating the SWW to revisit and refine our formula for guiding water temperature management. We're also continuing to evaluate the data we've collected to find ways of improving downstream fish passage, and we're studying various aspects of spring Chinook survival to see if there are measures that could improve adult Chinook returns.

We will use the data and understanding we gain from scientific monitoring and studies currently under way to adapt, refine and improve our operations and river management practices on the Deschutes. This process takes patience and persistence. We believe the results are well worth the effort.



**Confederated Tribes of the Warm
Springs Reservation of Oregon**

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