

# FCRPS BiOp Implementation

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December 2009

## Location

Trout Creek, Klickitat County,  
Washington

## Biological Objective

Increase spawning and rearing habitat for listed and non-listed fish

## Species

Lower Columbia Steelhead

## Partners

- Bonneville Power Administration
- Salmon Recovery Funding Board
- Yakama Nation
- American Rivers
- Ecotrust
- U.S. Fish and Wildlife Service
- NOAA Fisheries
- Mid-Columbia Fisheries Enhancement Group

## References

Federal Columbia River Power System (FCRPS) 2008 Biological Opinion

## FCRPS RPA #34

For more information visit  
[www.salmonrecovery.gov](http://www.salmonrecovery.gov)

## Hemlock Dam removal and Trout Creek restoration project

The culmination of the Hemlock Dam Removal Project happened quietly. At 5 a.m., Aug. 3, an excavator with a hammer attachment punched the first hole in the concrete. No torrent of water blasted through from a pent-up reservoir. All the water in Trout Creek, part of the Wind River watershed of southwest Washington, was already being pumped around the site through a half mile of pipe.

Twenty four hours later, the dam was completely gone. The pumps were turned off and the creek was re-watered. Just hours later, a video camera captured an adult steelhead swimming up the newly re-formed creek.

While hydroelectric dams provide emissions-free electricity and other extremely valuable power benefits, Hemlock Dam was obsolete. And it was the number one limiting factor in the recovery of wild steelhead native to this area that are listed under the Endangered Species Act.

Trout Creek was originally dammed in the early 1900s, when settlers erected a wooden splash dam to help move logs downstream. Thirty years later, the Civilian Conservation Corps built a concrete dam in the same place, hauling concrete in wheelbarrows to build the 183-foot long, 26-foot high dam.

The dam provided power and irrigation to nearby U.S. Forest Service facilities. Hemlock Lake, with its picnic tables and diving platforms, became a nice swimming hole for people.

But it was no longer a hospitable place for fish. The reservoir behind the dam changed the habitat. The lake became shallow over the years as silt accumulated behind the dam, burying rocks and downed trees salmon use as hiding and resting places in a natural stream. While there was a fish ladder, fish didn't use it easily and the shallow reservoir caused increased water temperatures in lower Trout Creek.

In 2007, BPA stepped forward to help fund the removal of Hemlock Dam. Other sponsors provided a 30 percent cost-share, including the Forest Service, Salmon Recovery Funding Board, the Yakama Nation, U.S. Fish and Wildlife Service, Ecotrust, Mid-Columbia Fisheries Enhancement Group, NOAA Fisheries and American Rivers.



The first hole being knocked in Hemlock Dam



Halfway through the dam removal process.

The project encompassed several years of planning and permitting and two months of restoring the streambed upstream of the dam. A Forest Service environmental impact statement found that removing the dam and unleashing the reservoir behind it would have had dire consequences to the steelhead just downstream of the dam. To reduce the impact to those fish, project sponsors decided instead to remove the finer sediments from the reservoir and then create a channel for the stream to flow into – one that included all the woody debris and rocks and crags that typify a natural stream.

To do this, workers diverted the stream about a half-mile above the dam and pumped the water to below the dam for the duration of the channel construction. Then five huge dump trucks hauled 55,000 yards of sediment out from behind the dam.

They scattered the reconstructed channel with tree trunks, simulating the fallen logs that helped establish the historic path of the river. They erected stumps of mature trees with root balls intact throughout the floodplain to mimic the trees that the creek washed around during heavy rains.

Working from 5 a.m. to 10 p.m. daily, the contractor was able to remove the sediment and reconstruct the half mile of stream channel in just over a month. Only then would the dam be removed.

With the dam removed, Trout Creek is again a natural stream. When the winter rains come in (the area gets more than 130 inches of rainfall per year), the now-modest stream will be torrential.

The newly-restored channel will hold up to the onslaught, but some of the logs and rocks may be washed to new places in the streambed. Over time, the streambed will grow and change naturally.



Workers scattered the reconstructed channel with tree trunks and placed stumps of mature trees with root balls intact throughout the floodplain to mimic the standing and fallen trees that the creek washed around.

Steelhead already are returning to this stretch of Trout Creek. Their eggs will incubate and hatch; juvenile fish will rear for a year or more and then migrate out to the ocean. A huge batch of new steelhead fry could get a big boost from the newly-released Trout Creek on their way to the ocean by May or June of next year.