



U.S. Fish & Wildlife Service

South Fork Necanicum Fish Passage Project, Oregon

The Necanicum River is located on the Northern Oregon Coast, and enters the Pacific Ocean near the City of Seaside, Oregon. This project is on the South Fork of the Necanicum River at a channel-spanning diversion dam located approximately 1.2 miles upstream from the confluence with the mainstem Necanicum.



Figure 1. Intact Diversion Dam on the South Fork Necanicum River.

The diversion dam supplies municipal water to the City of Seaside and presented several conservation problems. The dam was a seasonal adult fish passage barrier and full juvenile fish barrier. It disrupted natural transport of the alluvial matrix which negatively affected the quality of the downstream habitat. Water withdrawal to supply the city's legal drinking water right dewatered the South Fork Necanicum during low flow months in some dry years, depriving over 1 mile of downstream habitat. Further, there was not a regulatory compliant fish screen at the diversion to prevent entrainment and mortality of juvenile fish.

The City has another legal water right in the system to meet its needs, but the intake at the diversion dam was lacking appropriate infrastructure to control and shut it off to switch to other sources; therefore water was diverted at the dam, gravity fed to a reservoir, and spilled back into the mainstem when the reservoir is full.



Figure 2. Partially functioning fish ladder.

This deprived instream flows unnecessarily. In addition, the other key point of diversion at river mile 5 on the mainstem Necanicum, called Peterson Point, operated off of an antiquated single speed pumping system which did not allow precision withdrawal nor was it appropriately screened to prevent juvenile fish mortality.



Figure 3. Existing dam set up for deconstruction. Line marks elevation of finished roughened channel bed elevation.



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Figure 4. Constructing the roughened channel.

We implemented a multi-faceted solution to address all of these issues. At the diversion dam, we are providing full, unimpeded upstream and downstream fish passage for all life-history stages of native fish via a roughened channel and partial dam removal solution paired with a regulatory compliant rotating belt fish screen. If flows fall below three cubic feet per second, all flow stays in the river.

On the Peterson Point diversion, we added energy efficient pumps that enable low volume water withdrawals and provided fish screens on the intake structure to enable the City to protect fish and follow a water management plan.



Figure 5. New variable speed pumps to fine tune water withdrawal.



Figure 6. Final completed channel with fish passage restored.

This provides the City with the tools needed to limit the quantity of diverted water to equal their seasonal needs, to incorporate minimum bypass flows for increased instream aquatic species habitat in the South Fork, to have precision withdrawal at the Mainstem diversion to prevent unnecessary impacts on water quantity, to provide fish passage, and to prevent fish mortality due to entrainment in the two diversion intakes.

An editorial from the Daily Astorian (7/18/2012) stated: “It is easy to become demoralized about environmental news. It can appear that fish runs are on an inexorable downward curve, caused by ocean conditions that lay well beyond anyone’s ability to change.

If we succumb to that dire perspective, we forget there is much we can do to improve fish habitat. Nancy McCarthy’s pair of articles in Friday’s edition are a heartening illustration of what can happen when an array of agencies focuses on the Necanicum River. Those agencies include the Necanicum Watershed Council, Oregon Watershed Enhancement Board, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, the National Oceanic and Atmospheric Administration, Longview Timber and the city of Seaside.”