U.S. Fish & Wildlife Service

Coho Creek Fish Passage Seaside, Oregon

Figure 1. Temporarily stabilized culvert at Coho Creek.

The Coho Creek fish passage project is at Spruce Loop Road, the entrance to Seaside Heights Elementary School in Seaside, Oregon and a designated Tsunami evacuation route. In spring 2011 road slumping became visible. Further inspection by the school and City officials revealed culvert failure initiation. This posed a safety risk to 320 kindergarten to fifth grade students and their families who travel across the culvert daily as well as the surrounding community who depend on this as a tsunami safety area. Culvert failure would have also resulted in 10,000 cubic yards of earthen fill entering the stream and productive beaver marsh fish rearing habitats below the culvert. An expedient and creative partnership between Seaside School District, USFWS, Necanicum Watershed Council, City of Seaside, Oregon Department of Fish and Wildlife, NOAA-American Rivers, and Oregon Watershed Enhancement Board provided design, permitting, and funding to address this issue.

The culvert was a barrier to migrating fish due to a two foot perch at the downstream outlet, water velocities in the 160' culvert that exceeded fish swimming abilities, and water depths within the culvert that were insufficient for fish to swim at low flows. The culvert blocked nearly a mile of upstream spawning and rearing habitat for ESA-listed Coho salmon, and species of concern Oregon Coast teelhead, Coastal Cutthroat trout, and Pacific lamprey. Below the culvert is a fairly high quality beaver marsh habitat that could provide juvenile winter rearing habitat, a critical life history bottleneck for Coho, if the upstream spawning habitat was reopened.

A Fish Friendly Design. In order to advance the project quickly, the USFWS entered into an engineering services contract to secure a stream simulation design that met state and Federal fish passage standards as well as provided ample flood flow conveyance and needed public safety and structural stability. A technical team including the school, watershed council, city, ODFW, and USFWS selected a 16' wide by 160' long opened bottomed culvert as the preferred design solution. The open bottom allowed for a natural streambed and a low flow channel to be built inside the long culvert to ensure that adult and juvenile fish could move upstream and downstream at a variety of flows.

Figure 2. Concrete footers (7 on each side for the finished 160' long structure) were placed and the natural stream bottom was built inside the culvert.

Columbia River Fisheries Program Office
1211 SE Cardinal Ct., Suite 100
Vancouver, WA, 98683
360/604-2500
http://www.fws.gov/columbiariver

The stream simulation was installed to the design specifications with gravel, rock rib, and boulder size specifications based on instream conditions and hydraulic analysis. Partially buried larger boulders were placed to create hydraulic shadow areas for fish resting. After the gravel was placed, the surface was washed to allow the fines to work into open spaces and form a seal.

Figure 3. Washing fines into the compacted and gradated streambed rock to ensure the gravels and boulders would interlock and form a tight seal to allow for a low flow fish passage.

Figure 4. The first October stream flows go through the completed culvert: upstream fish passage is restored.

Student Education Opportunities. The proximity of the project to the Seaside School district provides for compelling social context. This road, which is the only access point to the school, was also designated as one of the areas' key

Figure 5. Seaside Heights Elementary teacher is interviewed by USFWS as part of a national video highlighting restoration projects.

tsunami evacuation routes and tsunami "safe area" for the community. While limited in budget to assist economically with the project, the school formed an active partnership with the Necanicum Watershed Council to increase use of the stream as part of their school curriculum. A path connects the school campus with the stream, enabling classes to learn about natural coastal fluvial habitats, species composition, and life history strategies of salmonids and other native species. The school continues to participate in this project, despite its limited financial resources, using the stream as a platform for increased natural resource-based educational and outreach components in the classroom.

Figure 6. Seaside Heights Elementary students visit the new culvert.

Columbia River Fisheries Program Office
1211 SE Cardinal Ct., Suite 100t
Vancouver, WA, 98683
360/604-2500
http://www.fws.gov/columbiariver