

**Nooksack Salmon Enhancement Association
Pacific Salmon Commission Project Report 4/20/09**

**Re: South Fork Nooksack River and Tributary Habitat Enhancement Project
(Contract SF-2008-H-13)**

Executive Summary:

The restoration of salmon habitat is vital to achieving improved spawning and rearing success, safe passage of adult and juvenile salmon, and optimum production of important naturally spawning salmonid stocks in the Nooksack Basin. Pacific Salmon Commission grant funding was used to remove 2 fish passage barriers on a tributary of the South Fork Nooksack River. These barriers were identified during a 2003-2005 Watershed Resource Inventory Area (WRIA) 1 Fish Passage Barrier Inventory Project and both were ranked in the top 30 for removal out of 837 barriers identified. Completion of the project resulted in fish access to over 2 miles of upstream habitat.

Introduction:

The goal of this project was to provide native salmonids access to over 2 miles of high quality upstream rearing and spawning habitat presently isolated by 2 artificial fish passage barriers in the South Fork Nooksack Watershed. Salmonid species that will benefit from this project include chinook, coho and chum salmon, steelhead, resident and sea-run cutthroat, and potentially bull trout. Removal of these barriers will also improve transport of sediment and woody debris critical to stream function and health.

The artificial barriers were identified during the WRIA 1 Fish Passage Barrier Inventory Project (2003-2005). The purpose of this project was to identify and assess all artificial fish passage barriers that exist in the Nooksack Basin using Washington Department of Fish and Wildlife (WDFW) protocols. Of the 1,674 structures accessed, 837 were found to be partial or complete barriers to fish passage. WRIA 1 Fisheries Co-managers (Lummi Nation, Nooksack Tribe and WDFW) and the Whatcom County Water Resources Department prioritized the top barriers for removal based on the calculated Priority Index (PI) value, and presence of endangered species. The Landingstrip Creek (South Fork Nooksack Tributary) fish passage barriers, with a PI value of 24.5, ranked in the top 30 for immediate removal.

Methods:

Fish passage barrier removal followed Washington Department of Fish and Wildlife (WDFW) fish passage design guidelines (2003). Both culvert removal sites were surveyed using WDFW protocols. At site 1, two 3' diameter 25' long barrier culverts were removed and the streambed was re-graded to match upstream and downstream profiles following fish exclusion and water diversion. Appropriate substrate was then added to the re-graded channel and a 40' by 14' pre-engineered steel bridge and footings were installed. The streambanks disturbed during construction were immediately seeded and mulched. Immediately upstream of the bridge installation several LWD structures were installed to provide cover and the streambanks were planted with appropriate native vegetation.

At site 2, one 2' diameter 80' long barrier culvert was replaced with 2 10'diameter 30' long culverts installed following the 2003 WDFW No Slope Design for Road Crossings. The streambed was re-graded to match upstream and downstream profiles following fish exclusion and water diversion and appropriate substrate was then added to the re-graded channel. The streambanks disturbed during construction were immediately seeded and mulched. Between the new culverts, one LWD structure was installed to provide cover and the streambanks were planted with appropriate native vegetation.

Results:

Removal of the 2 artificial barriers resulted in fish access to over 2 miles of upstream spawning and rearing habitat. Natural sediment transport processes were also restored improving downstream habitat. LWD installed will provide cover, and improve instream habitat diversity and the sorting of sediments. Revegetation of the streambanks with native plants will increase shade, reduce bank erosion and provide a future source of LWD.

Quality Assurance / Quality Control:

Qualified NSEA staff produced all project plans, obtained appropriate permits and provided oversight at all project sites. The WDFW Watershed Steward attended pre-project meetings and provided technical assistance on instream projects. Each project was reviewed upon completion and where deficiencies were identified, they were rectified.

Monitoring and evaluation:

The following monitoring protocols were used when appropriate and feasible. All sites will be monitored for a minimum of 3 years.

Pre-project monitoring

- Establish photo- points referenced according to the NW Region Watershed Restoration Effectiveness Monitoring Protocol (USFS 1996).
- Document existing vegetation using monitoring procedures developed in consultation with the Nooksack Recovery Team.
- Survey existing channel profile and cross sections
- Conduct spawning surveys using WDFW guidelines

Post-project monitoring

- Repeat photos at pre-established photo points
- New riparian vegetation was monitored using Nooksack Recovery Team Riparian Stand Restoration Monitoring Protocols developed in partnership with the University of Washington's Center for Streamside Studies. Effectiveness of the plant protection devices will be noted and tracked, as will the growth and overall survival of plants by species.
- Repeat survey of channel longitudinal profile and cross sections at LWD placement locations for 3 consecutive years to document changes in instream habitat quality and diversity
- Conduct spawning surveys using WDFW guidelines

Conclusion:

The WRIA 1 Fish Passage Barrier Inventory was completed in 2005. The purpose of this project was to identify and assess all artificial fish passage barriers that exist in WRIA 1 using WDFW SHEAR protocols. Of the 1,674 structures accessed, 837 were found to be partial or complete barriers to fish passage. The WRIA 1 Fisheries Co-managers (Lummi Nation, Nooksack Tribe and Washington Department of Fish and Wildlife) and the Whatcom County Water Resources Department prioritized the top barriers for removal based on the calculated Priority Index (PI) value, and presence of endangered species.

The WRIA 1 Salmonid Recovery Plan (2007) identifies and prioritizes projects that protect and restore habitats and ecosystem processes essential to the recovery of Endangered Species Act listed Chinook salmon and bull trout, along with other salmonids native to Water Resource Inventory Area (WRIA) 1. The Recovery Plan recommends the following sequence of projects:

- Protection of areas with high quality habitat and functional processes
- Reconnection of isolated high quality habitats (e.g., those blocked by culverts)
- Restoration of habitat forming processes, especially hydrologic, geologic (sediment delivery and routing), and riparian processes
- Instream habitat enhancement (e.g., addition of LWD)

This project is consistent with the strategy in that it:

- Reconnected 2 miles of isolated high quality habitat and restored sediment delivery through the removal of 2 priority fish passage barriers
- Restored habitat forming riparian processes by revegetating 500 feet of stream channel with native plants
- Enhanced instream habitat through LWD placement.

This Pacific Salmon Commission sponsored project combined long-term strategies to restore salmon habitat-forming processes with short-term strategies to improve immediate habitat access and suitability.

Project Partners

Organization	Role in Project
Pacific Salmon Commission	Project funding
Nooksack Salmon Enhancement Association	Project design, permitting, and oversight, crew training, tools and equipment
Washington Dept. of Fish and Wildlife	In-Kind Technical Assistance with project design and permitting
Washington Dept of Ecology	Financial and In-kind Assistance: WA Conservation Corps crew match, training and coordination
Whatcom County Water Resources Department	Financial: WA Conservation Corps crew match funds
National Fish and Wildlife Foundation	Project funding

References:

Design of Road Culverts for Fish Passage
Washington Department of Fish and Wildlife, 2003

WRIA 1 Salmon Recovery Plan
Nooksack Tribe, 2007

NSEA PSC Contract SF-2008-H-13 Final Financial Statement of Expenditures

South Fork Nooksack River and Tributary Habitat Enhancement Project

Time frame: 03/01/2008 to 03/31/2009

Labor: Wages & Salaries

Position	PSC Budget Amount	PSC Actual Spent	Variance from original budget
Project Manager	3,482	3,361	121
Executive Director	284	230	54
Finance Manager	365	326	39
Restoration Technicians	9,828	1,484	8,344
sub total	13,959	5,400	8,559

Subcontractors & Consultants

Excavation, grading and trucking	15,320	33,641	(18,321)
sub total	15,320	33,641	(18,321)

Site / Project costs

Travel (do not include to & from work)	334	514	(180)
Equipment & Materials	25,587	20,445	5,142
Total Site / Project Costs	25,921	20,959	4,962

Overhead

Overhead Costs	4,800	-	4,800
Total Overhead	4,800	-	4,800
Project Totals	60,000	60,000	-

Reasons for variance from original budget:

Restoration Technicians: the NSEA Washington Conservation Corps at no cost to this grant instead of NSEA crew members

Subcontractors & Consultants: As a fish passage project the majority of the costs were materials, heavy equipment; excavation, grading and trucking. In the original budget a state grant was going to pay for a portion of the contacting expenses. However, expense guidelines changed during the grant period which disallowed contractor expenses. These were then moved to PSC

Equipment & Materials: The cost of steel and fuel went up considerably since the budget was first formed increasing material costs

Overhead Costs; NSEA reduced its admin costs to 0 to allow for increase in contractor and material costs

Financial Manager Signature: 

Date: 4/23/09

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Site one Before and after Photos



Site 2 Before and After Photos

