Project Completion Abstract for Fish Passage Restoration Projects (engineering activities)

[3000 Road, Site13/1722, Fulton River Watershed, Northern Interior Forest Region]

Objectives of the overall project

The overall objective is to provide unrestricted fish passage for all life stages of fish for the purpose of spawning, rearing or migration which will support increased fish sustainability, survival and production. The existing culverts were undersized for Q_{100} flows, were restricting access to identified fish habitat upstream and were replaced with an open bottomed fish friendly structure (13.0m pre-cast concrete bridge). The bridge will remove the identified fish passage barrier created by the culverts and will ensure unrestricted fish passage is provided for all life stages of fish in the reconstructed stream channel. The project is not located within a community watershed.

Stream - Unnamed Stream,
Stream Classification – S3
Fish Species – Cutthroat trout

FIA Investment Schedule Number, Project Number, and Fiscal Year

FIA Investment Schedule Number: NOTSA 032502
Project Number: 2502001
Contract Number: 06-FIA-06
Fiscal Year: 2006/2007

Recipient Name and Division/ MoF District/ MoF Region

West Fraser Mills Ltd.
Pacific Inland Resources Division, Smithers, BC.
Skeena Stikine Forest District
Northern Interior Forest Region

Names/Affiliation of Registered Professionals Involved in the Project

Steve Andrade, AScT.
PACIFIC NORTH COAST CONSULTING Ltd.

Saqib Khan, PEng,
ASSOCIATED ENGINEERING (BC) Ltd.

Ralph Kossman, RPBio.
SILVICON SERVICES INC.

Author(s) of the Project Completion Abstract

Ralph Kossman, RPBio.
SILVICON SERVICES INC.
PO Box 490
3560 Victoria Drive
Smithers, BC, V0J 2N0
Ph: 250-847-3680, fax: 250-847-2530
e-mail: ralph.kossman@silvicon.com

Name of Watershed / Sub-basin, & Location

Watershed: Fulton River
Watershed Code: trib to 480-697200-76700
Stream Name: Unnamed
1:20,000 Mapsheet: 093M.006
Location: 3000 Road, ~23.5 km
Site Number: Site 13/1722
UTM Coordinates: E 640512 N 6103133

Introduction

An analysis of fish passage issues in the Bulkley TSA by Pacific Inland Resources, a division of West Fraser Mills, revealed that a pre-code stream crossing (twin 1200mm CMPs) existed on the 3000 Road at ~23.5km that did not meet current fish passage requirements. The 3000 Road is a permanent main haul road that has been in use for more than 25 years. In an effort to expand the available habitat for various fish populations, the current structure will be replaced with a permanent pre-cast concrete bridge.

Fish Passage Culvert Inspection – Sept. 15/03
Barriers – Partial; Culvert slope (4.4%) and culvert water velocity (1.2m/s) are barriers to juvenile fish passage upstream
Priority rank score – 41 (H)
Fish Species (CT) – 6 Habitat Value (H) – 9
Barrier (Partial) – 7 Habitat (>1km) – 9
% Stream Barred (>70%) – 10
Upstream Barriers (Yes) – 0

Description of Design

The stream in question is fish bearing and the existing culverts are a partial barrier to upstream fish passage. Since restoration of fish passage was the objective of the project, an open bottom structure that would span the reconstructed stream channel was

chosen. A pre-cast concrete bridge was selected for its longevity, low maintenance requirements and in order to minimize in-stream earthworks. Steel pipe piles were chosen as the most economical bridge foundation with pre-cast concrete spread footings as an alternative if piles were found to be unsuitable for the site.

Description of Completed Work

Construction commenced on Oct. 17/06 with the driving of the piles on the south (empty) side of Site 13/1722. Piles on the north (loaded) side were driven in the morning of Oct. 18/06. Piles on both sides were successfully driven to refusal. Following fish salvage (12 CTcaptured) and isolation of the in-stream work area, construction reconvened on Nov. 7/06 with the removal of the soil to expose the culverts and digging of a sumphole in the stream channel on the u/s side for the pump intake hoses. Using both 1.5 inch pumps to divert the stream flow around the construction site, we were not able to keep up with the stream flow. As it was mid-afternoon at this point, we left the site for the day and returned next morning, Nov. 8/06, with a larger 3 inch pump. Using the 3 inch pump in conjunction with the two 1.5 inch pumps, we were able to handle the stream flow and de-water the in-stream work area by diverting the flow around the work site. The culverts were then removed, the channel reconstructed with some LWD and large boulders placed in it and the banks lined with rip-rap. The stream flow was then returned to the newly constructed stream channel. The piles were then exposed, cut off at the correct height and the cap beams placed and then welded to the piles. Nov. 9/06 started with some back filling of the cap beams and placement of rip-rap in front of the cap beams. Placement of strip bearings and the concrete bridge slabs onto the cap beams followed. The approaches were then levelled and welding of the shear plates began. Nov. 10/06 saw completion of the shear plate welding, dowels placed and pockets grouted, expandable foam was injected between the longitudinal slab joints, the no post barriers placed at both ends of the bridge and erection of the bridge signs. The excavators were moved to Site 8/1666 at the end of the day. Isolation nets were removed from the stream channel. An environmental monitor was on site for all in-stream work phases.

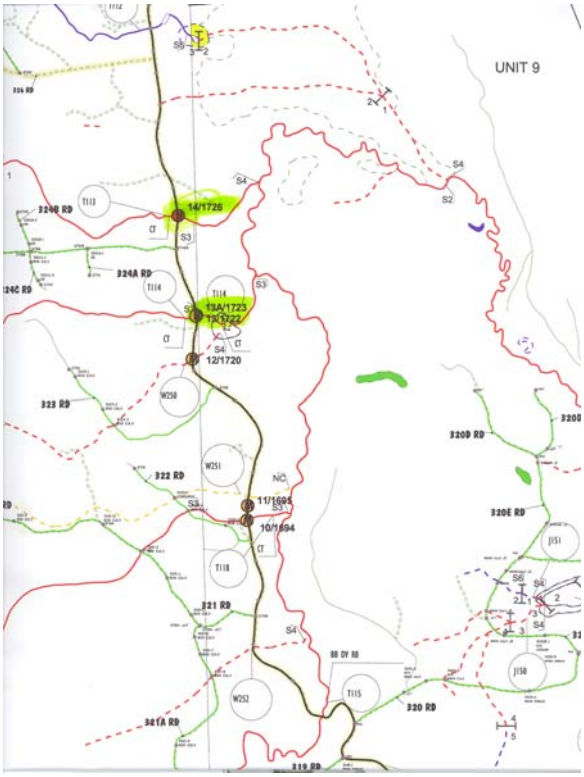
Cost Summary

Site Prescription/ Site Design	$2970.00
Project Supervision	$8042.03
Fish Salvage and Environmental Monitoring	$9980.40
Works	$86,730.00
	$1749.17
Total	$109,471.60

Post-construction Inspection

An engineer was on site for all stages of construction, therefore a formal post-construction inspection was not completed on this site. The engineer verified that all stages of the bridge construction were completed to design specifications, documented daily progress and submitted signed and sealed record drawings and a Certification of Construction along with a daily progress report.

Key Map



TRIM Mapsheets 093M.006 and 093M.007

Photographs

Photo 1. 3000 Road-Site 13/1722 culvert outlet conditions. 35cm outfall drop on both culverts.

Photo 2. 3000 Road-Site 13/1722, u/s view of reconstructed stream channel (Nov.9/06).

Photo 3. 3000 Road-Site 13/1722, Sumphole at u/s end of in-stream work site.

Note to Author:

The layout of the Project Completion Abstract should be in a two-column format (as viewed in Page Layout mode). The two page format of the abstract (not the content) is illustrated in the Annual Compendium of Aquatic Rehabilitation Projects for the WRP 1999-2000 available at

http://srmwww.gov.bc.ca/frco/bookshop/wrp.html