Fish Passage Assessments on Stream Crossings Within the Perry and Eagle River Watersheds And Portions of the Seymour watershed

Summary Report

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Prepared by: **Ralph Heinrich R.P.Bio**
Wildtech Biological Services
643 Bissette Rd
Kamloops, BC V2B 6L3

1.0 Introduction

Wildtech Biological Services was contracted by Timberline Natural Resources Group to conduct a fish passage assessment on stream crossings within the Perry and Eagle River Watersheds near Sicamous, BC. The field assessments were carried out in early October 2009. Each stream crossing was visited and assessed according to the standards set out in the documents "*Field Assessment for Fish Passage Determination of Closed Bottom Structures*" (BC Ministry of Environment 2009) and "*The Strategic Approach: Protocol for Planning and Prioritizing Culverted Sites for Fish Passage Assessment and Remediation*" (BC Ministry of Environment 2009).

This report represents a summary of the Fish Passage assessment carried out on stream crossings within the Perry and Eagle River watersheds and a portion of the crossings in the Seymour Watershed in October 2009. A Ministry of Forests and Range database error was identified on the Moss-George Forest Service Road (FSR) that identified it as being managed under a post-1995 active road permit. This error was discussed with PwC and the crossings on the Moss-George Forest Service Road were assessed in October of 2009. All FIA eligible crossings were assessed in October of 2009.

2.0 Site Description

The Seymour River watershed (73 200ha) is located in the Monashee mountains north of Sicamous BC. The Seymour River flows into Shuswap Lake North of Sicamous, BC. The portion of the Seymour watershed assessed in 2009 include the mainstem of Mosquito Creek and its tributaries along the Moss George FSR. The Perry River watershed (43 666 ha) is located in the Monashee Mountains north of Sicamous BC and flows into the Eagle River North approximately 45km upstream of Shuswap Lake near Sicamous, BC. The Eagle River Watershed encompasses approximately 112, 827 ha and the mainstem of the Eagle River is 81 km in length from the inlet at the Shuswap River to the Headwaters at Clanwilliam Lake (EVS 1998).

3.0 Methodology

A review of existing fish distribution information was conducted prior to field assessments. A search of the Fisheries Information Summary System (FISS) database revealed at least ten species of fish known to be present in one or both watersheds (Table 1). A modified Overview Fish Habitat Assessment was completed in 1998 by EVS Environment Consultants and the FISS database contained Department of Fisheries and Oceans Salmonid Escapement Records (SEDs and NUSEDs) from 1989-2000. All crossing were visited and assessed during October 2009.

Table 1 Fish species known to be present in the Perry and/or Eagle River Watersheds (FISS Database and EVS 1998).

Common name	***Latin name***	**Code**
Coho	*Onchorhyncchus kisutch*	Co
Chinook	*Onchorhyncchus tshawytscha*	CH
Sockeye	*Onchorhyncchus nerka*	SK
Kokanee	*Onchorhyncchus nerka*	KO
Rainbow Trout	*Onchorhyncchus mykiss*	RB
WestSlope Cutthroat	*Onchorhyncchus clarki lewisi*	WCT
Mountain Whitefish	*Prosopium williamsoni*	WF
Bull Trout	*Salvelinus confluentis*	BT
Prickly Sculpin	*Cottus asper*	
Long Nose Dace	*Rhinichtys cataractae*	

4.0 Results

The results of the field assessment were summarized in the FIA fish passage field data form (Excel spreadsheet) and submitted to the culvert data submission FTP site along with the associated maps and photos. The following is a summary of the priority crossings in that submission.

Table 2 Perry River Watershed Potential Crossings

Year	Site No.	Fish Presence	Known downstream fish barriers	Habitat Value	Amount of Suitable Habitat Upstream (m)
2009	P062	Not classified	None	Moderate	675
2009	P069	Not classified	None	Low	35
2009	P112	Fish Bearing	None	Moderate	30
2009	P124	Fish Bearing	Yes	Low	486

Crossings P112 and P124 present a unique situation. Fish were found to be present above and below both crossings. However, upstream fish movement barriers start at 30m upstream of P112. These barriers include a series of 3 – 8m high falls/log jams and gradients over 30%. There are two small lakes at the headwaters of this stream which are likely the source of fish in this system (No data was found in the FISS database on these two lakes). Since upstream movement is not possible due to natural stream characteristics, these two sites will not be included in the cost benefit analysis below.

Table 3 Eagle River Watershed Potential Crossings

Year	Site No.	Fish Presence	Known downstream fish barriers	Habitat Value	Amount of Suitable Habitat Upstream (m)
2009	E135	Fish Bearing	None	Low	429
2009	E211	Not classified	Gradient > 30%	moderate	5754
2009	E212	Not classified	Gradient > 30%	moderate	3177
2009	E217	Not classified	Gradient > 30%	moderate	440
2009	E218	Not classified	Gradient > 30%	moderate	3698

Crossings E211 – E218 are all on the same creek system (Owlhead Creek). Although the habitat above and below these crossings is moderate with good deep pool cover and over-wintering habitat, the stream gradients, below the lowest crossing E211, range between 32 and 36%. Therefore these crossings do not meet all the requirements listed below in section 5.1 and are not included in the cost benefit analysis.

5.0 Summary and Crossing Priority for Restoration

5.1 Fish Presence

The stream crossings listed below met all of the following criteria and have been prioritized:

- Fish presence upstream or within one stream order downstream of the stream crossing (1:50,000 scale).
- No downstream barriers to fish movement.
- Stream gradients upstream and downstream (point of known fish presence) less than 30% (bull trout system).
- No downstream crossings that are determined to be barriers to fish passage

5.2 Habitat Gained Index

All stream crossings that have met the fish presence criteria above, have been assigned a Habitat Gained Index (HGI). The HGI was determined by taking the linear distance (kilometers) of habitat upstream of the crossing and multiplying by the subjective habitat quality ranking assigned during the field assessment. Field habitat quality rankings were placed in one of three categories (ranking values in brackets): low (1), moderate (2) or high (3).

5.3 Cost Benefit Analysis

Table 4 Seymour Watershed (Moss George FSR crossings only) Cost benefit for proposed solutions

Year	Site No.	HGI	Proposed Solution 1	Span (m)/ Dimensions	Cost Est. 1 ($K)	Proposed Solution 2	Cost Est. 2 ($K)	Cost Benefit 1	Comments
2009	S327	11.00	Conc Slab	6m span	45			0.24	Mosquito Creek

Table 5 Perry River Cost benefit for proposed solutions

Year	Site No.	HGI	Proposed Solution 1	Span (m)/ Dimensions	Cost Est. 1 ($K)	Proposed Solution 2	Cost Est. 2 ($K)	Cost Benefit 1	Comments
2009	P062	1.35	SS (Arch)	19m x 2m	39			0.03	
2009	P069	0.035	SS (Arch)	19m x 2m	39			0.0009	Only 35m of upstream habitat

Out of the two sites within the Perry River watershed that qualify only site P062 has potential for restoration. Approximately 675m of habitat upstream would be gained by restoring fish passage at this crossing.

Table 6 Eagle River Cost Benefit for Proposed Solutions

Year	Site No.	HGI	Proposed Solution 1	Span (m)/ Dimensions	Cost Est. 1 ($K)	Proposed Solution 2	Cost Est. 2 ($K)	Cost Benefit 1	Comments
2009	E135	0.43	SS (Arch)	15m x 3m	39			0.01	

Restoration Priority

From the 2009 surveys, the following crossings are listed in order of priority for restoration:

1. Site S327 (Mosquito Creek) has the greatest potential for habitat gained upstream of the crossing
2. Site P062 in the Perry River watershed has some limited potential for restoration with 675m of moderate quality habitat upstream.
3. Site E135 in the Eagle River watershed has the least potential with only 429m of low quality habitat upstream of the crossing.

Further Assessments

The fish passage assessments summarized here include only a portion of the Shuswap Lake (SHUL) Watershed unit. Specifically only those sub-units, wholly or partially within the operating areas of Louisiana Pacific Ltd., were included in our assessment. The 2008 assessments on the Anstey and Seymour watersheds along with the 2009 fish passage assessments summarized in this report are comprehensive only within the Anstey, Seymour, Perry and Eagle River watershed sub-units of the SHUL watershed unit. In order to get a complete picture of fish passage restoration opportunities similar assessments should be completed within the other sub-units of the SHUL watershed unit.

Statement of Accuracy

The findings in this report are based on the best available information and sound science based field work. It is my professional judgment that the information in this report is accurate.

Signature: _____ Date: January 25, 2010

Name: Ralph Heinrich R.P.Bio No. 1229
Organization: Wildtech Biological Services

6.0 Literature Cited

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