APPENDIX 15-I
2012 FISH AND FISH HABITAT BASELINE REPORT

Seabridge Gold Inc.

KSM PROJECT
2012 Fish and Fish Habitat Baseline Report

SEABRIDGE GOLD

Rescan
Engineers & Scientists

Rescan™ Environmental Services Ltd.
Rescan Building, Sixth Floor - 1111 West Hastings Street
Vancouver, BC Canada V6E 2J3
Tel: (604) 689-9460 Fax: (604) 687-4277

November 2012

KSM PROJECT
2012 FISH AND FISH HABITAT BASELINE REPORT

November 2012
Project #0868-017-19

Citation:

Rescan. 2012. *KSM Project: 2012 Fish and Fish Habitat Baseline Report*. Prepared for Seabridge Gold Inc. by Rescan Environmental Services Ltd.: Vancouver, British Columbia.

Prepared for:

SEABRIDGE GOLD

Seabridge Gold Inc.

Prepared by:

Rescan™
Engineers and Scientists

Rescan™ Environmental Services Ltd.
Vancouver, British Columbia

Executive Summary

The primary purpose of the 2012 KSM Fish and Fish Habitat Baseline Program was to provide baseline data within the Project area that may be impacted by proposed mine infrastructure development, primarily along the road Treaty Creek Access Road alignment. This report describes sampling procedures and results of the 2012 KSM Project Fish and Fish Habitat Baseline Program.

All watercourse crossings were assessed along the Treaty Creek Access Road and transmission line. Ninety-seven stream sites were assessed, of which 11 were classified as fish-bearing. Using single pass electrofishing at eight of these sites, a total of four rainbow trout were caught in one of these streams. CPUE was calculated as an index of relative abundance for rainbow trout at this stream site.

Acknowledgements

This report was produced by Rescan Environmental Services Ltd. (Rescan). Kyla Warren (M.Sc.) was the Rescan Project Manager and Jason Clarke (M.Sc.) was the author of the report. Kyla Warren and Jason Clarke conducted field work, and field assistance was provided by Peter Warburton (B.Sc., R.P.Bio) and Scott Williams. Report production was co-ordinated by Agnes Untz (Publishing), Cinthia Low (Graphics), Kevin Lesk-Winfield (GIS), Andreas Pettersson (GIS), and Luke Powell (GIS).

KSM PROJECT
2012 FISH AND FISH HABITAT BASELINE REPORT

Table of Contents

List of Figures

FIGURE **PAGE**

List of Tables

TABLE **PAGE**

List of Appendices

Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

CPUE	Catch-Per-Unit-Effort
FDIS	Field Data Inventory System
FHAP	Fish Habitat Assessment Procedures
GPS	Global Positioning System
HV	Horizontal Visibility
ILP	Interim Locational Point
KSM	Kerr-Sulphurets-Mitchell
MOE	Ministry of Environment
MOF	Ministry of Forests
NCD	Non-Classified Drainage
NVC	No Visible Channel
QA	Quality Assurance
QC	Quality Control
RISC	Resource Information Standards Committee
SE	Standard Error
TMF	Tailing Management Facility
TRIM	Terrain Resource Inventory Mapping

1. Introduction

1.1 PROJECT PROPONENT

Seabridge Gold Inc. (Seabridge) is the proponent for the proposed KSM Project (the Project), a gold, copper, silver, and molybdenum mine.

1.2 PROJECT LOCATION

The Project is located in the coastal mountains of northwestern British Columbia. It is approximately 950 km northwest of Vancouver and 65 km northwest of Stewart, within 30 km of the British Columbia-Alaska border (Figure 1.2-1).

1.3 PROJECT OVERVIEW

The Project is located in two geographical areas: the Mine Site and Processing and Tailing Management Area (PTMA), connected by twin 23-km tunnels, the Mitchell-Treaty Twinned Tunnels (Figure 1.3-1). The Mine Site is located south of the closed Eskay Creek Mine, within the Mitchell, McTagg, and Sulphurets Creek valleys. Sulphurets Creek is a main tributary of the Unuk River, which flows to the Pacific Ocean. The PTMA is located in the upper tributaries of Teigen and Treaty creeks. Both creeks are tributaries of the Bell-Irving River, which flows to the Nass River and into the Pacific Ocean. The PTMA is located about 19 km southwest of Bell II on Highway 37.

The Mine Site will be accessed by a new road, the Coulter Creek Access Road, which will be built from km 70 on the Eskay Creek Mine Road. This road will follow Coulter and Sulphurets creeks to the Mine Site. The PTMA will also be accessed by a new road, the Treaty Creek Access Road, the first 3-km segment of which is a forest service road off of Highway 37. The Treaty Creek Access Road will parallel Treaty Creek.

Four deposits will be mined at the KSM Project — Kerr, Sulphurets, Mitchell, and Iron Cap — using a combination of open pit and underground mining methods. Waste rock will be stored in engineered rock storage facilities located in the Mitchell and McTagg valleys at the Mine Site. Ore will be crushed and transported through one of the Mitchell-Treaty Twinned Tunnels to the PTMA. This tunnel will also be used to route the electrical power transmission lines. The second tunnel will be used to transport personnel and bulk materials. The Process Plant will process an average of 130,000 tpd of ore to produce a daily average of 1,200 t of concentrate. Tailing will be pumped to the Tailing Management Facility from the Process Plant. Copper concentrate will be trucked from the PTMA along highways 37 and 37A to the Port of Stewart, which is approximately 170 km away via road.

The mine operating life is estimated at 51.5 years. Approximately 1,800 people will be employed annually during the Operation Phase. Project Construction will take about five years, and the capital cost of the Project is approximately US$5.3 billion.

Figure 1.2-1

SEABRIDGE GOLD
KSM PROJECT

KSM Project Location

Rescan
Engineers & Scientists

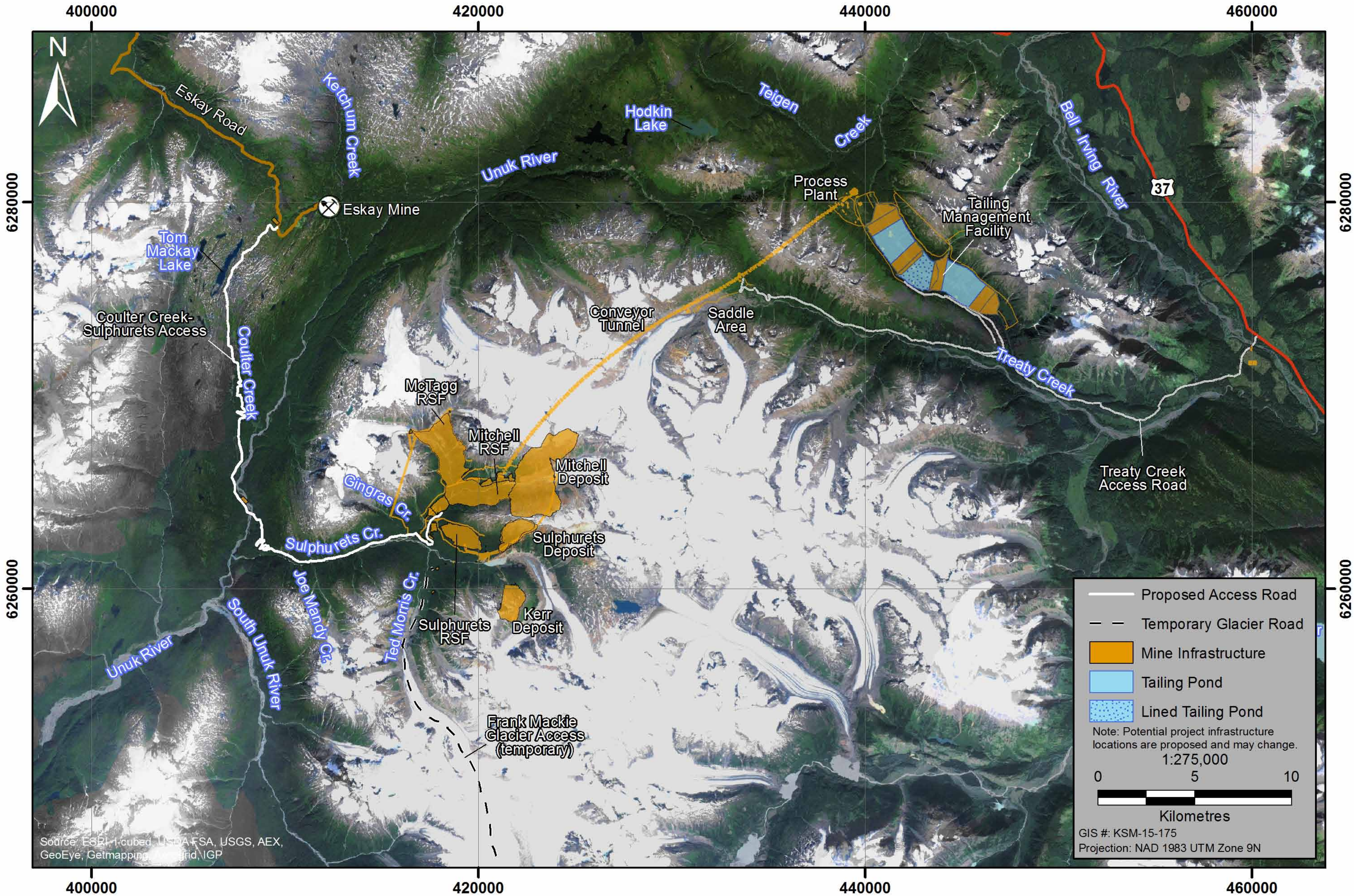


Figure 1.3-1

SEABRIDGE GOLD
KSM PROJECT

KSM Project Layout

Rescan
Engineers & Scientists

2. Objectives

The Unuk and Bell-Irving rivers are large river systems that provide spawning migration routes for all five species of Pacific salmon and anadromous rainbow trout (known as steelhead trout), as well as habitat for resident trout (cutthroat and rainbow), resident char (Dolly Varden and bull trout) and whitefish.

The primary purpose of the 2012 KSM Fish and Fish Habitat Baseline Program is to provide baseline data on fish and fish habitat within the Project area that may be impacted by the development of proposed mine infrastructure. The objectives are as follows:

- determine fish presence, community composition, spatial distribution and barriers to fish movement for watercourses along the proposed Treaty Creek Access Road and transmission line; and
- assess the quality of fish habitat in watercourses along the proposed Treaty Creek Access Road and transmission line.

These objectives were achieved through field work in 2012, review of 2008, 2009, 2010 and 2011 baseline data (Rescan 2009, 2010, 2011a), and review of relevant background information about fish and fish habitat distribution, abundance and habitat use within the study area. The fish and fish habitat baseline baseline program for the proposed Coulter Creek Access Road was conducted in 2008 and 2009 (Rescan 2009 and 2010).

3. Study Area

The fish and fish habitat study area encompasses three major watersheds: Unuk, Bell-Irving and Bowser rivers. The baseline study area boundaries are based upon the locations of the proposed mine and infrastructure development (Figure 3-1). The 2012 fish and fish habitat assessments focused on the proposed Treaty Creek Access Road and transmission line.

PROJECT # 868-011-19 GIS No. KSM-06-100 April 19, 2012

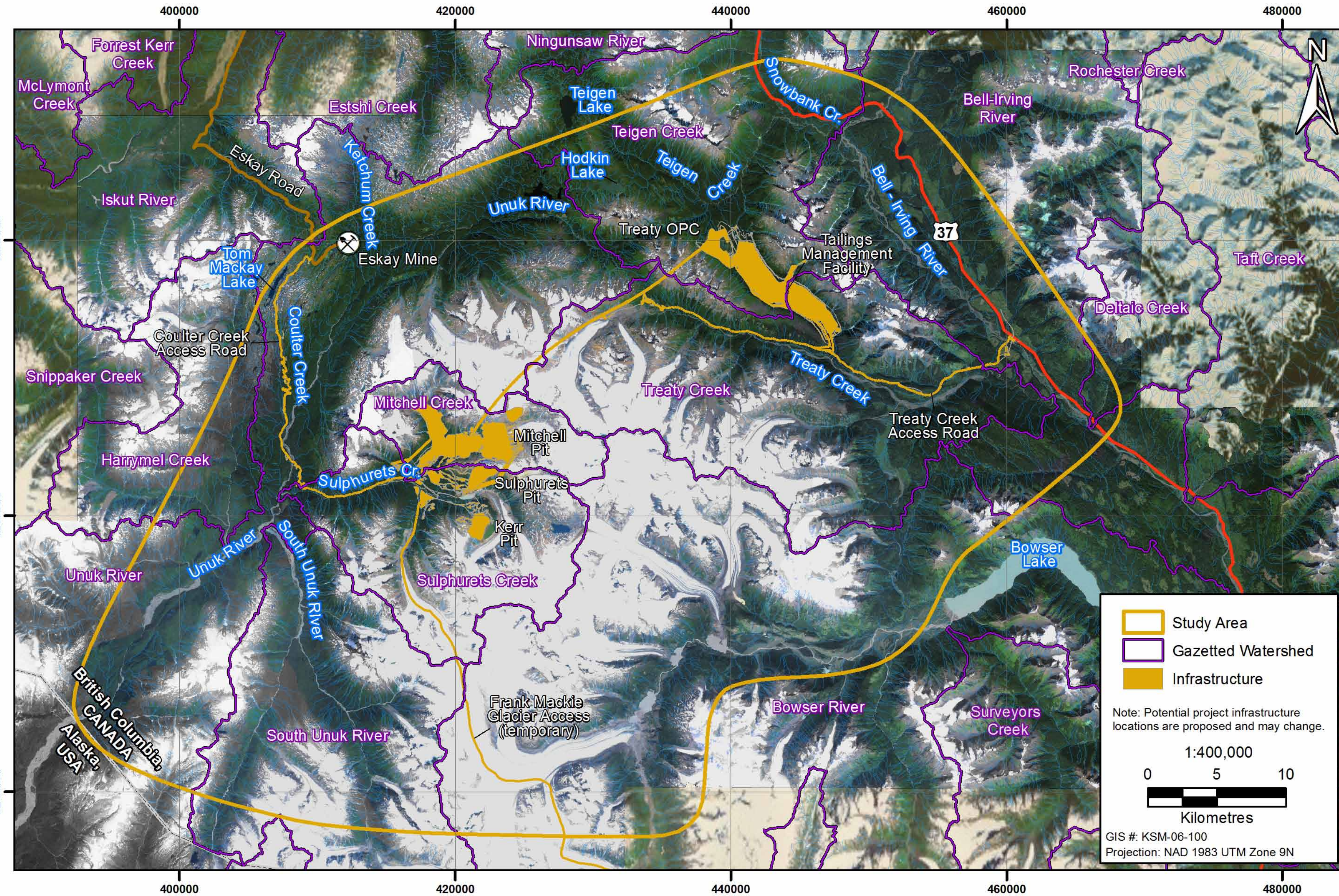


Figure 3-1

SEABRIDGE GOLD
KSM PROJECT

KSM Fisheries Study Area, 2012

Figure 3-1

Rescan Engineers & Scientists

4. Methods

4.1 TREATY CREEK ACCESS ROAD AND TRANSMISSION LINE

4.1.1 Study Design

Watercourse crossings were assessed along the proposed Treaty Creek Access Road and transmission line. The access road route parallels Treaty Creek from its confluence with the Bell-Irving River to near the upper reaches of the creek. Generally, the transmission line parallels the access road. Within the study area, the provincial Terrain Resource Inventory Mapping (TRIM) indicates there are numerous watercourses. However, based on previous watercourse crossing field assessments indicate that the majority of these watercourses are ephemeral drainages and are not streams (Rescan 2009, 2010, 2011a). Watercourses crossing the access road were ground-truthed and assessed from June 24 to July 1, 2012. The objectives of the watercourse assessments were to confirm fish presence, describe fish habitat and rank fish habitat suitability.

4.1.2 Fish Habitat

The locations of the proposed Treaty Creek Access Road and transmission line were ground-truthed with a map and compass. Field crews ground-truthed the proposed alignments for locations of streams, non-classified drainages (NCD) and no visible channels (NVC). Stream sites were classified as “true streams” if they met the definition of a stream — a continuous, defined channel for at least 100 m (MOF 1998). Sites with partial or discontinuous channelization were categorized as NCDs. Sites where water seeped or flowed overland, or where water pooled at a potential road crossing but where no channelization was apparent, were classified as NVC. For NCDs and NVCs, photos were taken facing upstream and downstream and global positioning system (GPS) coordinates (±10 m) were obtained.

For all site classifications (i.e., NVC, NCD or stream), a unique identifying site number, or interim locational point (ILP), was assigned.

At each stream crossing location, streams were assessed using methods based on the *Reconnaissance 1:20,000 Fish and Fish Habitat Inventory Protocol* (RISC 2001) and the *Reconnaissance 1:20,000 Fish and Fish Habitat Inventory: Site Card Field Guide* (RISC 1999a). This protocol involved characterizing fish habitat over a 100 m-long section of stream by measuring physical attributes (e.g., channel width, gradient, temperature and water quality), characterizing cover types and substrate (dominant and subdominant cover and substrate type, cover abundance and location) and describing stream morphology. Table 4.1-1 presents a complete list of attributes measured at each stream crossing. Based on the attributes collected at the stream crossing in the field, professional expertise was used to rank habitat suitability for each fish life history stage (i.e., spawning, rearing and over-wintering) and overall habitat quality. Table 4.1-2 presents habitat suitability and overall habitat quality ranks and their corresponding criteria.

A minimum of two photographs was taken to document each site, one facing upstream from the proposed crossing and one facing downstream from the crossing. Additional photographs were taken of barriers or features, and GPS coordinates were obtained.

Table 4.1-1. Attributes Measured during Habitat Assessments at Stream Crossing Sites

Substrate	Physical Measurements	Habitat	Cover
Dominate type	Bankfull width (m)	Stream morphology	Total amount
Sub-dominant type	Wetted width (m)	Presence of bars	Dominant, sub-dominant and trace cover types
D (cm)	Residual pool depth (cm)	Presence of islands	Cover location
D95 (cm)	Bankfull depth (m)	Bank shape	Canopy closure (%)
Bank texture	Gradient (%)	Stream pattern	Riparian vegetation
	Temperature (°C)	Confinement	Riparian vegetation stage
	Conductivity (μS/cm)	Hillslope coupling	
	pH (log units)	Spawning, rearing, overwintering suitability	
	Turbidity	Overall habitat quality	
		Riparian function	

D = largest stone that will move in a normal flood period (measured along the intermediate axis; cm)(RISC 2001).
D95 = stone that is in the top 5th percentile (by size)(measured along the intermediate axis; cm)(RISC 2001).
Turbidity was visually estimated.

Table 4.1-2. Life History Habitat Suitability and Overall Habitat Quality Criteria Assessed at Stream Crossing Sites

Life Stage Suitability Rank	Criteria
None	No habitat present for any life history stage
Poor	Most of the necessary physical/biological components of the habitat for this life history stage are missing or severely deficient
Fair	Some of the necessary physical/biological components of the habitat for this life history stage are present, but a key component is missing
Good	All of the necessary physical/biological components of the habitat for this life history stage are present
Overall Habitat Quality Rank	**Criteria**
None	No habitat present at crossing
Marginal	Low productive capacity
Important	Common habitat which supplies needs of fish – typically rearing/over-wintering and some potential and commonly observed spawning substrate
Critical	Rare or exceptionally productive or unusual habitat with very high habitat values which are of uncommon and/or highly valuable production

4.1.3 Fish Community

4.1.3.1 Community Composition

The stream crossings along the proposed Treaty Creek Access Road and transmission line were sampled using backpack electrofishers following RISC *Fish Collection Methods and Standards* (RISC 1997), *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures* (RISC 2001) and the *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Fish Collection Field Guide* (RISC 1999b). The primary objective of fish sampling was to confirm fish presence and the secondary objective was to determine the fish community composition (MOE 1998). Fish sampling occurred in the same locations where the habitat assessments occurred.

Electrofishing was conducted over a minimum 100 m-long stream section (50 m both upstream and downstream of each proposed crossing site); and for approximately 100 electrofishing seconds at each site. Only one electrofishing pass was made and no stop nets were used to prevent fish movement. Electrofishing in spawning areas during fish spawning activity was avoided to reduce the chance of harming fish and impacting spawning activities as required by the collection permit. Biological information was collected on captured fish including species and length (to the nearest 1 mm). All fish were then returned live to the stream.

4.1.3.2 Stream Classification

A defensible, systematic approach was adopted to classify the fish bearing status of a stream crossing. Streams were classified according to the *Forest Practices Code of British Columbia Fish-Stream Identification Guidebook* (MOF 1998). Under this procedure, streams were classified based on mean channel width (m) and fish bearing status. A summary of stream classes is presented in Table 4.1-3. The guidebook provides criteria for classifying streams as either fish-bearing (i.e., Classes S1, S2, S3, and S4) or non fish-bearing (i.e., S5 and S6). The guidebook classifies streams as non fish-bearing if the average gradient is greater than 20%. However, it is recognized that Dolly Varden and bull trout have the ability to move upstream in channels gradients up to 30% if adequate step pools are present (MOF 1998; McPhail 2007). Therefore, stream reaches were "confirmed" as non fish-bearing using gradient criteria alone if the average channel gradient was greater than 20%, channels were not defined, step-pool morphology is absent, pools are shallow and void of alluvial deposits (i.e., over-wintering habitat is absent), habitat was very marginal and no lakes were present.

Table 4.1-3. Forest Practices Code Stream Classification Width Criteria

Stream Classification	Mean Channel Width (m)	Fish Present?
S1	> 20.0	Yes
S2	5.0 to 20.0	Yes
S3	1.5 to 5.0	Yes
S4	< 1.5	Yes
S5	> 3.0	No
S6	≤ 3.0	No

Barrier searches and assessments were conducted on streams downstream of the proposed Treaty Creek Access Road and transmission line crossings. The presence of falls greater than 2 m high and steep cascades can restrict fish dispersal upstream and may "confirm" non fish-bearing status to the upstream reaches if falls are permanent and adequate sampling effort is conducted. Adequate sampling effort (based upon habitat features), in connection with habitat assessments, was conducted to confirm streams as non fish-bearing. The rationale for changing stream classifications from "default" fish-bearing to "confirmed" fish-bearing included the following criteria:

- previous records showed fish present at crossing;
- fish were observed or sampled at or upstream of the crossing;
- fish were observed or sampled downstream of the crossing:
  - TRIM map gradients demonstrated that no part of the drainage downstream of the crossing flowed through gradients greater than 20% and lack of habitat limitations discussed above; and
- fish were present downstream of a man-made obstruction (e.g., hanging culvert) and there was an absence of natural barriers upstream of the obstruction.

4.2 DATA ANALYSIS

Data collected during the fish habitat assessment and fish sampling associated with stream habitats were transcribed from field notes into the MOE Field Data Inventory System (FDIS) for data storage and interpretation. Where applicable, data were represented as means and the statistic of dispersion was the standard error (SE) of the mean.

CPUE is an index of relative abundance that can be used to compare fish populations among different areas. This was based on the assumption that catch is proportional to fishing effort and capture efficiency is independent of field conditions (Hubert and Fabrizio 2007). It is defined as the number of fish captured per sampling device per unit time.

For electrofishing, the CPUE was calculated from the number of fish captured per 100 seconds:

$$CPUE = \text{number of fish caught} \times (100/\text{electrofishing effort (s)})$$

4.3 QUALITY ASSURANCE/QUALITY CONTROL

In order to ensure consistently accurate data collection, a Quality Assurance (QA) and Quality Control (QC) program was established at the onset of the field program. The program involved a practice session held in the field prior to any crew conducting stream assessments to review data collection procedures. Throughout the course of the field program, a qualified and experienced Quality Assurance Biologist reviewed each completed data card daily. A QA checklist was also completed for each site. Whenever clarification was required on specific points, the card was returned to the crew leader for editing and was accepted only after the necessary changes were made. Data entry, into FDIS and other databases, subsequent to the field program provided another opportunity to ensure data consistency through application of the built-in quality assurance routine which generated a QA report for review. Comments were provided to address deficiencies and conflicts identified in the quality assurance report generated by FDIS. Data transcription quality was also verified by comparing a sub-sample of randomly selected site cards with the corresponding data entered into FDIS and into project maps. The standard for QC under the *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory Protocol* is to verify 5% of all site cards (RISC 2001). The biological data were plotted to identify any outliers that may have resulted from transcription errors that occurred in the field.

5. Results

5.1 TREATY CREEK ACCESS ROAD AND TRANSMISSION LINE

All watercourses to be crossed by the proposed Treaty Creek Access Road and Treaty Spur Road and parallel portions of the transmission line along Treaty Creek Access Road were assessed. Detailed site card data and photos are located in Appendices 5.1-1, 5.1-2 and 5.1-3. Stream crossing locations are shown in Figure 5.1-1.

A total of 97 crossings were assessed for the proposed Treaty Creek Access Road and transmission line. Of the 97 streams, 11 were classified as fish-bearing based upon single pass electrofishing sampling, available existing information, habitat conditions, lack of fish movement barriers, and suitable gradient to support fish.

Table 5.1-1 presents a summary of each watercourse crossing. Details regarding stream classification, location, channel measurements, bed substrate, channel morphology, cover type, riparian habitat and habitat quality are presented in this table. Channel characteristics and fish habitat cover are site-specific, and habitat quality varies between sites. Generally, stream crossings along the Treaty Creek Access Road are small, high gradient channels subject to continuous disturbance (i.e., high bed load movement) with poor quality rearing habitat and poor to none spawning habitat.

Table 5.1-1 presents a summary of fish species captured and historical fish presence information at stream sites along the proposed Treaty Creak Access Road. A total of eight sites along the Treaty Creek Access Road were sampled via electrofishing for a combined total electrofishing effort of 735 s (Table 5.1-2; Appendix 5.1-4). A total of four juvenile Rainbow Trout were caught at one stream site (Table 5.1-3; Appendix 5.1-5). No other species were caught at any of the other sites. Appendix 5.1-4 presents electrofishing effort, catch, and site locations, and Appendix 5.1-5 presents biological data for fish sampled.

PROJECT # 868-017-19 GIS No. KSM-06-152_T November 2, 2012

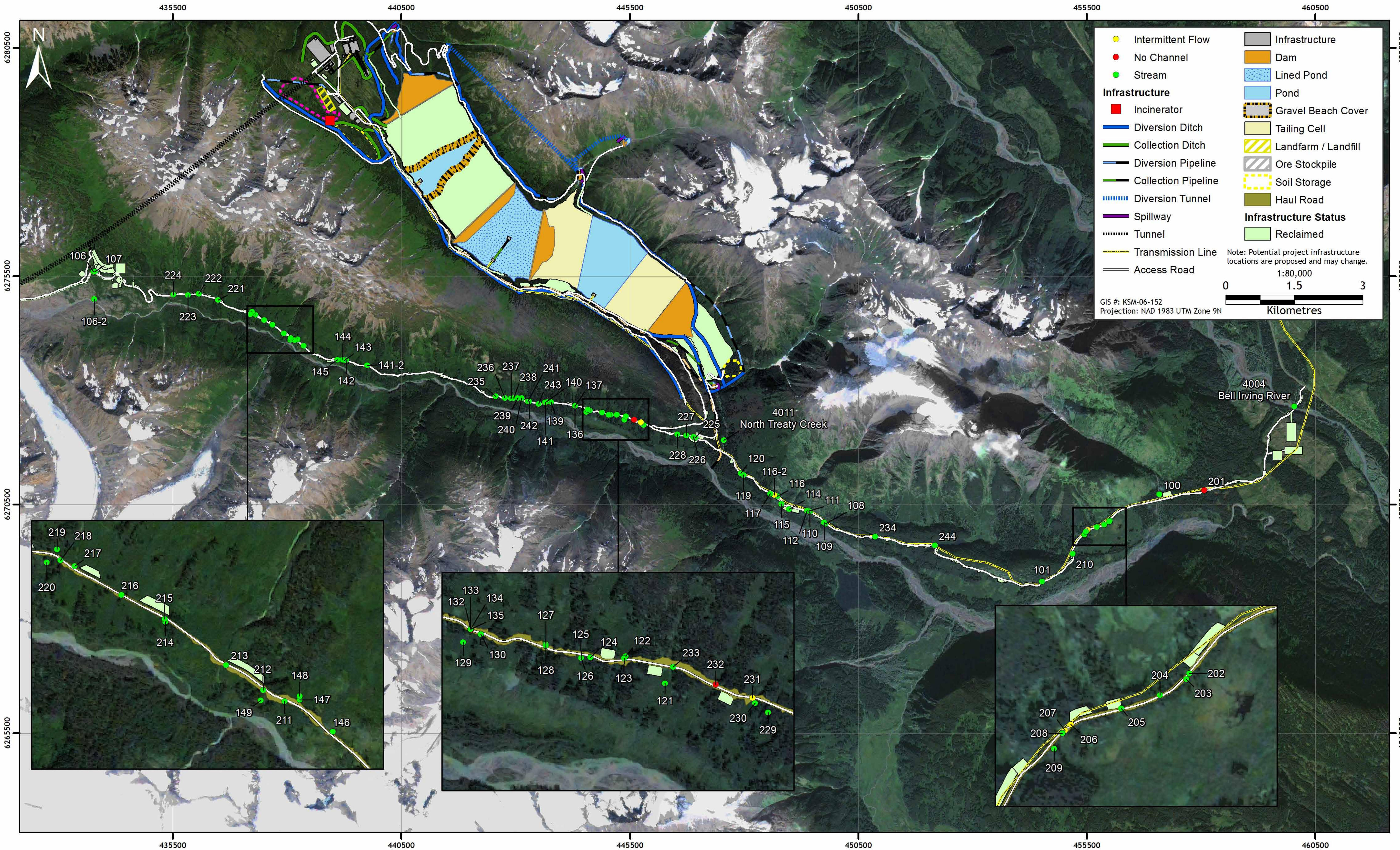


Figure 5.1-1

Rescan Engineers & Scientists

Location of Conceptual Treaty Access Road Watercourse Crossings

SEABRIDGE GOLD
KSM PROJECT

Table 5.1-1. Individual Stream Crossings, 2012

				Location		Channel Measurements				Channel Characteristics		Habitat		Habitat Quality			Fish		
Alignment	Waterbody Name	Habitat Type	Stream Class	Easting	Northing	Mean Channel Width (m)	Mean Gradient (%)	Mean Residual Pool Depth (m)	Mean Bankfull Depth (m)	Dominant Substrate	Morphology	Dominant Cover Type	Riparian Vegetation Type	Over-wintering	Rearing	Spawning	Sampled	Fish-bearing Status	Species Present
Treaty Access Road	100	Stream	S1	457091	6270729	63.3	19.0%	-	3.0	C	RP	B	M	P	F	P	Yes	Default	DV*
Treaty Access Road	108	Stream	S3	449782	6270082	2.0	24.0%	-	0.4	C	CP	SWD	C	P	F	P	Yes	Confirmed	RB, DV*
Treaty Access Road	114	Stream	S2	448987	6270402	15.5	20.0%	-	0.6	B	CP	B	D, M	P	F	P	Yes*	Confirmed	DV
Treaty Access Road	204	Stream	S4	455882	6270066	0.3	18.0%	0.1	0.1	C	CP	SWD,OV	S,C	P	P	P	Yes*	Default	DV*
Treaty Access Road	205	Stream	S4	455723	6270012	0.4	15.0%	-	0.1	C	CP	OV	S,M	P	P	P	Yes*	Default	DV*
Treaty Access Road	209	Stream	S4	455448	6269847	0.9	9.0%	-	8.7	C	CP	SWD,OV	M	P	F	P	Yes*	Default	DV*
Treaty Access Road	243	Stream	S3	443508	6272703	2.1	18.0%	0.1	0.5	C	CP	SWD	C	P	G	F	Yes	Default	DV*
Treaty Access Road	244	Stream	S2	452180	6269610	5.5	18.0%	-	1.2	C	CP	OV	C	P	F	P	Yes*	Confirmed	RB, DV
Treaty Access Road	210	Stream	S3	455190	6269430	4.0	16.0%	-	-	-	CP	OV	M	P	F	-	No	Default	RB, DV*
Treaty Access Road	4004 - Bell Irving River	Stream	S1	460039	6272653	70.0	0.5	-	-	G	RP	SWD	M	G	G	F	Yes*	Confirmed	BT, CH, CO, DV, MWF, SK, RB
Treaty Access Road	4011 - North Treaty Creek	Stream	S2	447556	6271912	8.9	2.7	-	1.1	B	CP	B	D	G	F	P	Yes*	Confirmed	DV, MWF
Treaty Access Road	101	Stream	S6	454518	6268819	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	103	Stream	S6	-	-	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	104	Stream	S6	-	-	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	105	Stream	S6	-	-	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	106	Stream	S6	433770	6275601	0.3	32.0%	-	-	G	CP	B	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	106-2	Stream	S6	433781	6275004	0.3	33.0%	-	0.1	G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	107	Stream	S5	433793	6275602	5.7	34.0%	-	0.4	B	CP	B	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	109	Stream	S6	449755	6270112	0.7	21.0%	-	0.1	C	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	110	Stream	S6	449441	6270347	0.2	32.0%	-	0.0	F	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	111	Stream	S6	449412	6270365	0.4	30.0%	-	0.1	C	CP	SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	112	Stream	S6	449381	6270369	0.5	29.0%	-	0.1	C	-	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	115	Stream	S6	448820	6270520	0.5	24.5%	-	0.1	F	SP	OV	C	P	F	P	Yes	Unconfirmed	-
Treaty Access Road	116	Stream	S6	448727	6270685	0.7	-	-	0.1	F	-	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	116-2	Stream	INT	448660	6270712	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	117	Stream	S6	448574	6270741	1.2	35.0%	-	0.1	G	F	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	118	Stream	S6	-	-	1.5	29.0%	-	0.1	G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	119	Stream	S6	447990	6271149	1.8	34.0%	-	0.1	F	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	120	Stream	S6	447931	6271189	0.9	65.0%	-	-	B	SP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	121	Stream	S6	445383	6272364	0.8	36.0%	-	0.1	F	CP	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	122	Stream	S6	445221	6272476	0.4	41.0%	-	0.1	F	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	123	Stream	S6	445215	6272467	0.9	49.0%	-	0.1	F	SP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	124	Stream	S6	445076	6272471	2.0	63.0%	-	0.4	B	CP	SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	125	Stream	S6	445038	6272469	1.5	58.0%	-	0.1	G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	126	Stream	S6	445038	6272469	1.2	34.0%	-	0.2	G	CP	SWD,OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	127	Stream	S6	444894	6272525	1.8	32.0%	-	-	F	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	128	Stream	S6	444894	6272519	0.8	37.0%	-	0.1	G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	129	Stream	S6	444554	6272533	1.1	45.0%	-	0.3	G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	130	Stream	S6	444626	6272566	1.4	42.0%	-	0.2	G	CP	SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	131	Stream	NC	444587	6272584	-	34.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	132	Stream	NC	444585	6272587	-	41.0%	-	-	F	CP	SWD,OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	133	Stream	S6	444585	6272587	3.0	40.0%	-	0.2	G	CP	OV	-	-	-	-	No	Unconfirmed	-

(continued)

Table 5.1-1. Individual Stream Crossings, 2012 (continued)

				Location		Channel Measurements				Channel Characteristics		Habitat		Habitat Quality			Fish		
Alignment	Waterbody Name	Habitat Type	Stream Class	Easting	Northing	Mean Channel Width (m)	Mean Gradient (%)	Mean Residual Pool Depth (m)	Mean Bankfull Depth (m)	Dominant Substrate	Morphology	Dominant Cover Type	Riparian Vegetation Type	Over-wintering	Rearing	Spawning	Sampled	Fish-bearing Status	Species Present
Treaty Access Road	134	Stream	S6	444585	6272587	3.0	34.0%	-	1.0	G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	135	Stream	S6	444585	6272587	1.5	30.0%	-	0.4	G	-	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	136	Stream	S6	444305	6272665	0.9	29.0%	-	0.2	F	CP	SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	137	Stream	S6	444305	6272665	2.5	30.0%	-	0.2	G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	138	Stream	S6	-	-	0.9	38.0%	-	0.3	C,G	-	LWD,OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	139	Stream	S5	443781	6272747	3.2	36.0%	-	0.7	C	CP	SWD,LWD,OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	140	Stream	S6	443677	6272751	1.0	25.0%	-	0.1	F,G	CP	SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	141	Stream	S6	443652	6272739	1.7	26.0%	-	0.6	G	CP	SWD, OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	141-2	Stream	S5	439755	6273556	8.0	31.0%	-	6.0	C	-	SWD,OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	142	Stream	S6	439293	6273665	1.0	30.0%	-	0.3	G	-	SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	143	Stream	S5	439255	6273662	5.0	35.0%	-	0.4	G	-	B,SWD,OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	144	Stream	S6	439220	6273673	0.8	39.0%	-	0.2	G	-	OV,SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	145	Stream	S5	439104	6273673	3.5	55.0%	-	0.3	C	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	146	Stream	S6	438370	6273978	2.1	78.0%	-	0.1	C	CP	OV,SWD	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	147	Stream	S5	438234	6274109	1.5	28.0%	-	1.0	G	CP	SWD,OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	148	Stream	S6	438234	6274124	1.0	82.0%	-	0.2	C,G	CP	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	149	Stream	S6	438074	6274106	1.0	29.0%	-	0.2	F	-	OV	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	201	Stream	NC	458071	6270813	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	202	Stream	S6	456003	6270155	-	35.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	203	Stream	S6	455990	6270132	-	30.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	206	Stream	INT	455516	6269946	-	10.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	207	Stream	INT	455493	6269922	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	208	Stream	S6	455482	6269910	-	-	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	211	Stream	S6	438171	6274102	-	85.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	212	Stream	S6	438084	6274148	-	25.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	213	Stream	S6	437931	6274251	-	25.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	214	Stream	S6	437683	6274428	-	19.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	215	Stream	S6	437680	6274440	-	21.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	216	Stream	S6	437502	6274539	-	22.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	217	Stream	S6	437311	6274657	-	27.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	218	Stream	S6	437252	6274681	-	23.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	219	Stream	S6	437238	6274726	-	23.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	220	Stream	S6	437196	6274672	-	21.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	221	Stream	S6	436488	6274982	-	22.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	222	Stream	S6	436070	6275115	-	15-30%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	223	Stream	S6	435836	6275089	-	25.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	224	Stream	S6	435517	6275096	-	45.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	225	Stream	S6	446932	6271969	-	90.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	226	Stream	S6	446891	6271989	-	16-50%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	227	Stream	S6	446737	6272018	-	105.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	228	Stream	S6	446543	6272042	-	100.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	229	Stream	S6	445806	6272245	-	55.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	230	Stream	S6	445753	6272283	-	50.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-

(continued)

Table 5.1-1. Individual Stream Crossings, 2012 (completed)

				Location		Channel Measurements				Channel Characteristics		Habitat		Habitat Quality			Fish		
Alignment	Waterbody Name	Habitat Type	Stream Class	Easting	Northing	Mean Channel Width (m)	Mean Gradient (%)	Mean Residual Pool Depth (m)	Mean Bankfull Depth (m)	Dominant Substrate	Morphology	Dominant Cover Type	Riparian Vegetation Type	Over-wintering	Rearing	Spawning	Sampled	Fish-bearing Status	Species Present
Treaty Access Road	231	Stream	INT	445743	6272305	-	35.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	232	Stream	NC	445592	6272360	-	45.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	233	Stream	S6	445416	6272432	-	45.0%	-	-	-	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	234	Stream	S6	450872	6269799	0.4	4.0%	-	-	F,C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	235	Stream	S6	442563	6272878	0.4	22.0%	-	-	C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	236	Stream	S6	442771	6272836	0.3	45.0%	-	-	C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	237	Stream	S6	442906	6272825	0.5	26.0%	-	-	C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	238	Stream	S6	442958	6272835	0.4	32.0%	-	-	C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	239	Stream	S6	443047	6272835	0.3	45.0%	-	-	C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	240	Stream	S6	443134	6272832	0.6	55.0%	-	-	C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	241	Stream	S6	443270	6272762	0.5	85.0%	-	-	C	-	-	-	-	-	-	No	Unconfirmed	-
Treaty Access Road	242	Stream	S6	443298	6272760	0.4	37.0%	-	-	G	-	-	-	-	-	-	No	Unconfirmed	-

Dashes indicate not applicable or no data available

Asterisks indicate species not confirmed but likely present based upon habitat characteristics

NC = No channel

INT = intermittent flow

Riparian Vegetation Type: D = deciduous; C = coniferous; S = shrubs; G = grass; M = mixed

Dominant Substrate: F = fines; C = cobble; B = boulder; G = gravel

Morphology: CP = cascade pool; RP = riffle pool; SP = step pool; LC = large channel

Cover: B = boulder; IV = intream veg.; LWD = large woody debris; P = pool; OV = overhanging veg.; SWD = small woody debris; UB = undercut bank

Habitat: G = good; P = poor; F = fair; N = none

Species: BT = bull trout; CH = Chinook salmon; CO = coho salmon; DV = Dolly Varden; MWF = mountain whitefish; SK = sockeye salmon; RB = rainbow trout/steelhead

Table 5.1-2. Summary Statistics of Electrofishing Effort and CPUE, 2012

		Rainbow Trout	
Site No.	Total Effort (s)	n	CPUE
100	-	0	-
108	180	4	2.22
114	134	0	-
115	104	0	-
243	-	0	-
204	125	0	-
205	102	0	-
209	90	0	-

Dashes indicate not applicable or no data available
CPUE = catch-per-unit-effort, fish/100 s
n = number of fish caught

Table 5.1-3. Mean Fork Length of Rainbow Trout, 2012

	Fork Length (mm)		
Site	n	Mean	SE
108	4	87.5	9.64

n = sample size
SE = standard error of the mean

6. Conclusion

The fish habitat data for the proposed Treaty Creek Access Road and transmission line provides an indication of the quality of fish habitat present at watercourses. This data will inform project design and watercourse crossing design to mitigate potential fish habitat impacts. If fish habitat impacts cannot be mitigated then this data will assist in fish habitat loss determination, and eventual compensation.

Fish assessments provide an indication of fish presence, community composition, spatial distribution and barriers to fish movement for watercourses along the proposed Treaty Creek Access Road, as well as baseline CPUE data.

References

Definitions of the acronyms and abbreviations used in this reference list can be found in the Glossary and Abbreviations section.

Hubert, W. A. and M. C. Fabrizio. 2007. Relative abundance and catch/effort relationships. In *Analysis and Interpretation of Freshwater Fisheries Data*, ed. C. S. Guy and M. L. Brown, 279-326. American Fisheries Society, Bethesda, Maryland.

McPhail, J. D. 2007. *The freshwater fishes of British Columbia*. Edmonton: University of Alberta Press.

Ministry of Environment (MOE). 1998. *Fisheries Information Summary System*. http://a100.gov.bc.ca/pub/fidq/main.do (accessed October 2012).

Ministry of Forests (MOF). 1998. *Fish-stream identification guidebook*. Second Edition. Forest Practices Code Guidebook. B.C. Ministry of Forests. Victoria, B.C.

Rescan Environmental Services (Rescan). 2009. *Kerr-Sulphurets-Mitchell Project: 2008 fisheries baseline study report*. Prepared for Seabridge Gold Inc. by Rescan Environmental Services.

Rescan Environmental Services (Rescan). 2010. *Kerr-Sulphurets-Mitchell Project: 2009 fisheries baseline study report*. Prepared for Seabridge Gold Inc. by Rescan Environmental Services.

Rescan Environmental Services (Rescan). 2011a. *KSM Project: 2010 fish and fish habitat baseline report*. Prepared for Seabridge Gold Inc. by Rescan Environmental Services.

Rescan Environmental Services (Rescan). 2011b. *KSM Project: 2010 surface water hydrology baseline report*. Prepared for Seabridge Gold Inc. by Rescan Environmental Services.

Resource Information Standards Committee (RISC). 1997. *Fish collection methods and standards*. Version 4.0. Victoria, B.C.

Resource Information Standards Committee (RISC). 1999a. *Reconnaissance (1:20 000) fish and fish habitat inventory: Site Card Field Guide*. Victoria, B.C.

Resource Information Standards Committee (RISC). 1999b. *Reconnaissance (1:20 000) fish and fish habitat inventory: Fish Collection Field Guide*. Victoria, B.C.

Resource Information Standards Committee (RISC). 2001. *Reconnaissance (1:20 000) fish and fish habitat inventory: Standards and procedures*. Victoria, B.C.

Appendix 5.1-1
Watercourse Crossing Site Location Data, 2012

Rescan™
Engineers and Scientists

Appendix 5.1-1. Watercourse Crossing Site Location Data, 2012

Site No.	Survey Date (mm/dd/yyyy)	UTM Method	UTM Zone	UTM Easting	UTM Northing
100	6/24/2012	GPU	9	457091	6270729
101	6/25/2012	GPU	9	454518	6268819
103	6/24/2012	-	-	-	-
104	6/24/2012	-	-	-	-
105	6/24/2012	-	-	-	-
106	6/25/2012	GPU	9	433770	6275601
106-2	6/25/2012	GPU	9	433781	6275604
107	6/25/2012	GPU	9	433793	6275602
108	6/26/2012	GPU	9	449782	6270082
109	6/26/2012	GPU	9	449755	6270112
110	6/26/2012	GPU	9	449441	6270347
111	6/26/2012	GPU	9	449412	6270365
112	6/26/2012	GPU	9	449381	6270369
114	6/27/2012	GPU	9	448987	6270402
115	6/27/2012	GPU	9	448820	6270520
116	6/27/2012	GPU	9	448727	6270685
116-2	6/27/2012	GPU	9	448660	6270712
117	6/27/2012	GPU	9	448574	6270741
118	6/27/2012	-	-	-	-
119	6/27/2012	GPU	9	447990	6271149
120	6/27/2012	GPU	9	447931	6271189
121	6/28/2012	GPU	9	445383	6272364
122	6/28/2012	GPU	9	445221	6272476
123	6/28/2012	GPU	9	445215	6272467
124	6/28/2012	GPU	9	445076	6272471
125	6/28/2012	GPU	9	445038	6272467
126	6/28/2012	GPU	9	445038	6272469
127	6/28/2012	GPU	9	444894	6272525
128	6/28/2012	GPU	9	444894	6272519
129	6/28/2012	GPU	9	444754	6272533
130	6/28/2012	GPU	9	444626	6272566
131	6/28/2012	GPU	9	444587	6272584
132	6/28/2012	GPU	9	444585	6272587
133	6/28/2012	GPU	9	444585	6272587
134	6/28/2012	GPU	9	444585	6272587
135	6/28/2012	GPU	9	444585	6272587
136	6/28/2012	GPU	9	444305	6272665
137	6/28/2012	GPU	9	444305	6272665
138	6/28/2012	-	-	-	-
139	6/28/2012	GPU	9	443781	6272747
140	6/28/2012	GPU	9	443677	6272751
141	6/28/2012	GPU	9	443652	6272738
141-2	6/29/2012	GPU	9	439755	6273556
142	6/29/2012	GPU	9	439293	6273665
143	6/29/2012	GPU	9	439255	6273662
144	6/29/2012	GPU	9	439220	6273673
145	6/29/2012	GPU	9	439104	6273673
146	6/29/2012	GPU	9	438370	6273978

Appendix 5.1-1. Watercourse Crossing Site Location Data, 2012

Site No.	Survey Date (mm/dd/yyyy)	UTM Method	UTM Zone	UTM Easting	UTM Northing
147	6/29/2012	GPU	9	438234	6274109
148	6/29/2012	GPU	9	438234	6274124
149	6/29/2012	GPU	9	438074	6274106
201	6/24/2012	GPU	9	458071	6270813
202	6/25/2012	GPU	9	456003	6270155
203	6/25/2012	GPU	9	455990	6270132
204	6/25/2012	GPU	9	455882	6270066
205	6/25/2012	GPU	9	455723	6270012
206	6/25/2012	GPU	9	455516	6269946
207	6/25/2012	GPU	9	455493	6269922
208	6/25/2012	GPU	9	455482	6269910
209	6/25/2012	GPU	9	455418	6269847
210	6/25/2012	-	-	-	-
211	6/26/2012	GPU	9	438171	6274102
212	6/26/2012	GPU	9	438084	6274251
213	6/26/2012	GPU	9	437931	6274251
214	6/26/2012	GPU	9	437683	6274428
215	6/26/2012	GPU	9	437680	6274440
216	6/26/2012	GPU	9	437502	6274539
217	6/26/2012	GPU	9	437311	6274697
218	6/26/2012	GPU	9	437252	6274681
219	6/26/2012	GPU	9	437238	6274726
220	6/27/2012	GPU	9	437196	6274672
221	6/27/2012	GPU	9	436488	6274982
222	6/27/2012	GPU	9	436070	6275115
223	6/27/2012	GPU	9	435836	6275096
224	6/27/2012	GPU	9	435517	6275096
225	6/28/2012	GPU	9	446932	6271969
226	6/28/2012	GPU	9	446891	6271989
227	6/28/2012	GPU	9	446737	6272018
228	6/28/2012	GPU	9	446543	6272042
229	6/28/2012	GPU	9	445806	6272245
230	6/28/2012	GPU	9	445753	6272283
231	6/28/2012	GPU	9	445743	6272305
232	6/28/2012	GPU	9	445592	6272360
233	6/28/2012	GPU	9	445416	6272432
234	6/29/2012	GPU	9	450872	6269799
235	6/30/2012	GPU	9	442563	6272878
236	6/30/2012	GPU	9	442771	6272836
237	6/30/2012	GPU	9	442906	6272825
238	6/30/2012	GPU	9	442958	6272835
239	6/30/2012	GPU	9	443047	6272835
240	6/30/2012	GPU	9	443134	6272832
241	6/30/2012	GPU	9	443270	6272762
242	6/30/2012	GPU	9	443298	6272760
243	7/1/2012	GPU	9	443508	6272703

GPU = global positioning unit

Dashes indicate no data available

Appendix 5.1-2

Watercourse Crossing Fish Habitat Data, 2012

Rescan™
Engineers and Scientists

Appendix 5.1-2. Watercourse Crossing Fish Habitat Data, 2012

	Channel																													
Site No.	Channel Width 1 (m)	Channel Width 2 (m)	Channel Width 3 (m)	Channel Width 4 (m)	Channel Width 5 (m)	Channel Width 6 (m)	Channel Width 7 (m)	Avg. Channel Width (m)	Method (for channel width)	Wetted Width 1 (m)	Wetted Width 2 (m)	Wetted Width 3 (m)	Wetted Width 4 (m)	Wetted Width 5 (m)	Wetted Width 6 (m)	Wetted Width 7 (m)	Avg. Wetted Width (m)	Method (for wetted width)	Residual Pool Depth 1 (m)	Residual Pool Depth 2 (m)	Residual Pool Depth 3 (m)	Residual Pool Depth 4 (m)	Average Residual Pool Depth (m)	Method (for Residual Pool Depth)	Bankfull Depth 1 (m)	Bankfull Depth 2 (m)	Bankfull Depth 3 (m)	Bankfull Depth 4 (m)	Average Bankfull Depth (m)	Method (for Bankfull Depth)
100	50	60	80	-	-	-	-	63.3	ground estimate	6	8	12	-	-	-	-	8.67	ground estimate	-	-	-	-	-	-	3	-	-	-	3	metre stick
101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106	0.3	0.37	0.34	-	-	-	-	0.3	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106-2	0.3	-	-	-	-	-	-	0.3	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	-
107	4	8	5	-	-	-	-	5.7	ground estimate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	0.4	-
108	2.5	1.5	-	-	-	-	-	2	ground estimate	2.5	1.5	-	-	-	-	-	2	ground estimate	-	-	-	-	-	-	0.25	0.1	0.1	0.12	0.1425	metre stick
109	0.7	-	-	-	-	-	-	0.7	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	-
110	0.2	-	-	-	-	-	-	0.2	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	-
111	0.4	-	-	-	-	-	-	0.4	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	-
112	0.5	-	-	-	-	-	-	0.5	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	-
114	16	14	12	20	-	-	-	15.5	ground estimate	4	3	5	7	-	-	-	4.75	ground estimate	-	-	-	-	-	-	0.45	0.4	-	-	0.425	metre stick
115	0.6	0.35	0.57	0.67	0.33	0.62	-	0.5	metre stick	0.6	0.25	0.45	0.56	0.33	0.62	-	0.47	metre stick	-	-	-	-	-	-	0.1	0.1	0.15	-	0.12	metre stick
116	-	-	-	-	-	-	-	-	-	0.3	1	-	-	-	-	-	0.65	metre stick	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
118	1.5	-	-	-	-	-	-	1.5	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
121	0.8	-	-	-	-	-	-	0.8	metre stick	0.7	-	-	-	-	-	-	0.7	metre stick	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
122	0.4	-	-	-	-	-	-	0.4	metre stick	0.2	-	-	-	-	-	-	0.2	metre stick	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
123	0.9	-	-	-	-	-	-	0.9	metre stick	0.9	-	-	-	-	-	-	0.9	metre stick	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
124	2	-	-	-	-	-	-	2	metre stick	1.2	-	-	-	-	-	-	1.2	metre stick	-	-	-	-	-	-	0.35	-	-	-	0.35	metre stick
125	1.5	-	-	-	-	-	-	1.5	metre stick	1	-	-	-	-	-	-	1	metre stick	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
126	1.2	-	-	-	-	-	-	1.2	metre stick	0.5	-	-	-	-	-	-	0.5	metre stick	-	-	-	-	-	-	0.2	-	-	-	0.2	metre stick
127	1.8	-	-	-	-	-	-	1.8	metre stick	0.5	-	-	-	-	-	-	0.5	metre stick	-	-	-	-	-	-	-	-	-	-	-	-
128	0.8	-	-	-	-	-	-	0.8	metre stick	0.6	-	-	-	-	-	-	0.6	metre stick	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
129	1.1	-	-	-	-	-	-	1.1	metre stick	1.1	-	-	-	-	-	-	1.1	metre stick	-	-	-	-	-	-	0.3	-	-	-	0.3	metre stick
130	1.4	-	-	-	-	-	-	1.4	metre stick	1	-	-	-	-	-	-	1	metre stick	-	-	-	-	-	-	0.2	-	-	-	0.2	metre stick
131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
133	3	-	-	-	-	-	-	3	ground estimate	1.7	-	-	-	-	-	-	1.7	metre stick	-	-	-	-	-	-	0.2	-	-	-	0.2	metre stick
134	3	-	-	-	-	-	-	3	ground estimate	2	-	-	-	-	-	-	2	ground estimate	-	-	-	-	-	-	1	-	-	-	1	metre stick
135	1.5	-	-	-	-	-	-	1.5	ground estimate	1	-	-	-	-	-	-	1	ground estimate	-	-	-	-	-	-	0.4	-	-	-	0.4	metre stick
136	0.9	-	-	-	-	-	-	0.9	metre stick	0.7	-	-	-	-	-	-	0.7	metre stick	-	-	-	-	-	-	0.2	-	-	-	0.2	metre stick
137	2.5	-	-	-	-	-	-	2.5	ground estimate	2	-	-	-	-	-	-	2	ground estimate	-	-	-	-	-	-	0.2	-	-	-	0.2	metre stick
138	0.9	-	-	-	-	-	-	0.9	metre stick	0.9	-	-	-	-	-	-	0.9	metre stick	-	-	-	-	-	-	0.25	-	-	-	0.25	metre stick
139	3.2	-	-	-	-	-	-	3.2	metre tape	3	-	-	-	-	-	-	3	metre tape	-	-	-	-	-	-	0.7	-	-	-	0.7	metre stick
140	1	-	-	-	-	-	-	1	metre stick	1.2	-	-	-	-	-	-	1.2	metre stick	-	-	-	-	-	-	0.12	-	-	-	0.12	metre stick
141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
141	8	-	-	-	-	-	-	8	metre tape	0.8	-	-	-	-	-	-	0.8	metre stick	-	-	-	-	-	-	6	-	-	-	6	metre stick
142	1	-	-	-	-	-	-	1	metre stick	0.8	-	-	-	-	-	-	0.8	metre stick	-	-	-	-	-	-	0.25	-	-	-	0.25	metre stick
143	5	-	-	-	-	-	-	5	metre tape	2	-	-	-	-	-	-	2	metre tape	-	-	-	-	-	-	0.4	-	-	-	0.4	metre stick
144	0.8	-	-	-	-	-	-	0.8	metre tape	0.4	-	-	-	-	-	-	0.4	metre tape	-	-	-	-	-	-	0.2	-	-	-	0.2	metre stick
145	3.5	-	-	-	-	-	-	3.5	metre tape	3	-	-	-	-	-	-	3	metre tape	-	-	-	-	-	-	0.25	-	-	-	0.25	metre stick
146	2.1	-	-	-	-	-	-	2.1	metre tape	1.9	-	-	-	-	-	-	1.9	metre tape	-	-	-	-	-	-	0.1	-	-	-	0.1	metre stick
147	1.5	-	-	-	-	-	-	1.5	metre tape	1.5	-	-	-	-	-	-	1.5	metre tape	-	-	-	-	-	-	1	-	-	-	1	metre stick
148	1	-	-	-	-	-	-	1	metre tape	0.7	-	-	-	-	-	-	0.7	metre tape	-	-	-	-	-	-	0.18	-	-	-	0.18	metre stick
149	1	-	-	-	-	-	-	1	metre tape	1	-	-	-	-	-	-	1	metre tape	-	-	-	-	-	-	0.2	-	-	-	0.2	metre stick
201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dashes indicate not applicable or no data available

Appendix 5.1-2. Watercourse Crossing Fish Habitat Data, 2012

Site No.	Channel																													
	Channel Width 1 (m)	Channel Width 2 (m)	Channel Width 3 (m)	Channel Width 4 (m)	Channel Width 5 (m)	Channel Width 6 (m)	Channel Width 7 (m)	Avg. Channel Width (m)	Method (for channel width)	Wetted Width 1 (m)	Wetted Width 2 (m)	Wetted Width 3 (m)	Wetted Width 4 (m)	Wetted Width 5 (m)	Wetted Width 6 (m)	Wetted Width 7 (m)	Avg. Wetted Width (m)	Method (for wetted width)	Residual Pool Depth 1 (m)	Residual Pool Depth 2 (m)	Residual Pool Depth 3 (m)	Residual Pool Depth 4 (m)	Average Residual Pool Depth (m)	Method (for Residual Pool Depth)	Bankfull Depth 1 (m)	Bankfull Depth 2 (m)	Bankfull Depth 3 (m)	Bankfull Depth 4 (m)	Average Bankfull Depth (m)	Method (for Bankfull Depth)
203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
204	0.45	0.2	0.3	0.35	0.4	0.4	0.3	0.3	metre stick	0.45	0.2	0.3	0.35	0.4	0.4	0.3	0.34	metre stick	0.1	0.1	0.12	0.1	0.105	metre stick	-	-	-	-	-	-
205	0.6	0.2	0.3	0.5	0.4	0.6	0.4	0.4	metre stick	0.6	0.2	0.3	0.5	0.4	0.6	0.4	0.43	metre stick	-	-	-	-	-	-	0.1	0.1	0.1	-	0.1	metre stick
206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
207	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
209	1.2	0.7	0.9	1	1.2	0.8	0.7	0.9	metre stick	0.9	0.6	0.7	1	1	0.7	0.7	0.8	metre stick	-	-	-	-	-	-	0.1	0.1	0.1	-	0.1	metre stick
210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
213	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
214	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
217	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
223	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
224	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
227	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
234	0.2	0.6	-	-	-	-	-	0.4	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	0.4	-	-	-	-	-	-	0.4	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
236	0.3	-	-	-	-	-	-	0.3	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
237	0.5	-	-	-	-	-	-	0.5	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
238	0.4	-	-	-	-	-	-	0.4	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
239	0.3	-	-	-	-	-	-	0.3	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	0.6	-	-	-	-	-	-	0.6	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
241	0.5	-	-	-	-	-	-	0.5	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
242	0.4	-	-	-	-	-	-	0.4	metre stick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
243	6.24	7.83	4.44	-	-	-	-	6.17	metre tape	5.44	5.3	2.1	-	-	-	-	4.28	metre tape	0.1	-	-	-	0.1	metre stick	0.46	-	-	-	0.46	metre stick

Dashes indicate not applicable or no data available

Appendix 5.1-2. Watercourse Crossing Fish Habitat Data, 2012

	Water												Cover									
Site No.	Gradient 1 (%)	Gradient 2 (%)	Average Gradient (%)	Method (for gradient)	Stage	Temperature (˚C)	Method (for Temperature)	Conductivity (µS/cm)	Method (for conductivity)	pH	Method (for pH)	Turbidity	Total Cover	Small Woody Debris	Large Woody Debris	Boulders	Undercut Banks	Deep Pools	Overhanging Vegetation	Instream Vegetation	Crown Closure	Functional LWD
100	19	-	19	clinometer	moderate	-	-	-	-	-	-	moderately turbid	-	trace	sub-dominant	dominant	-	-	sub-dominant	-	0	abundant
101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106	32	-	32	clinometer	-	4	thermometer (mercury)	-	-	-	-	-	-	-	-	dominant	-	-	-	-	>90%	-
106-2	33	-	33	clinometer	-	3	thermometer (mercury)	-	-	-	-	-	moderate	-	-	trace	-	-	dominant	-	>90%	-
107	34	-	34	clinometer	-	-	-	-	-	-	-	-	-	-	-	dominant	-	-	sub-dominant	-	>90%	-
108	24	-	24	clinometer	-	8	thermometer (mercury)	100	recording meter	7.4	pH meter (general)	Clear	moderate	dominant	sub-dominant	-	trace	-	sub-dominant	-	1-20%	few
109	21	-	21	clinometer	-	8	thermometer (mercury)	-	-	-	-	-	-	sub-dominant	-	-	-	-	dominant	-	>90%	-
110	32	-	32	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	-	-	-	-	-	-	dominant	-	41-70%	-
111	30	-	30	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	-	dominant	-	-	-	-	sub-dominant	-	>90%	-
112	29	-	29	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	-	sub-dominant	-	-	-	-	dominant	-	71-90%	-
114	20	-	20	clinometer	-	4	thermometer (mercury)	90	recording meter	7.33	pH meter (general)	Clear	moderate	sub-dominant	trace	dominant	-	-	trace	-	0	none
115	24	25	24.5	clinometer	moderate	8	thermometer (mercury)	80	recording meter	6.74	pH meter (general)	Clear	abundant	sub-dominant	trace	-	trace	-	dominant	-	1-20%	few
116	-	-	-	-	-	6	thermometer (mercury)	-	-	-	-	-	-	-	-	-	-	-	dominant	sub-dominant	-	-
116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117	35	-	35	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
118	29	-	29	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	-	trace	sub-dominant	-	-	-	dominant	-	-	-
119	34	-	34	clinometer	-	9	thermometer (mercury)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	clinometer	-	-	-	-	-	-	-	-	-	-	sub-dominant	-	-	-	dominant	-	-	-
121	36	-	36	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	abundant	-	-	-	-	-	dominant	sub-dominant	41-70%	-
122	41	-	41	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	trace	-	-	-	-	-	dominant	-	41-70%	-
123	49	-	49	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	abundant	sub-dominant	-	-	-	-	dominant	-	21-40%	-
124	63	-	63	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	trace	dominant	-	-	-	-	-	-	1-20%	-
125	58	-	58	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	moderate	sub-dominant	-	-	-	-	dominant	-	1-20%	-
126	34	-	34	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	moderate	dominant	-	-	-	-	dominant	-	-	-
127	32	-	32	clinometer	-	8	thermometer (mercury)	-	-	-	-	-	abundant	sub-dominant	-	-	-	-	dominant	-	-	-
128	37	-	37	clinometer	-	9	thermometer (mercury)	-	-	-	-	-	-	trace	-	-	-	-	dominant	-	-	-
129	45	-	45	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	abundant	sub-dominant	sub-dominant	-	-	-	dominant	-	-	-
130	42	-	42	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	moderate	dominant	-	-	-	-	sub-dominant	-	71-90%	-
131	34	-	34	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132	41	-	41	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	abundant	dominant	-	-	-	-	dominant	-	-	-
133	40	-	40	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	abundant	sub-dominant	sub-dominant	-	-	-	dominant	-	-	-
134	34	-	34	clinometer	-	5	thermometer (mercury)	-	-	-	-	-	-	trace	-	-	-	-	dominant	-	-	-
135	30	-	30	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	trace	-	-	-	-	-	dominant	-	71-90%	-
136	29	-	29	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	moderate	dominant	-	-	-	-	dominant	-	1-20%	-
137	30	-	30	clinometer	-	8	thermometer (mercury)	-	-	-	-	-	moderate	sub-dominant	-	-	-	-	dominant	-	41-70%	-
138	38	-	38	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	-	-	trace	-	-	-	trace	-	41-70%	-
139	36	-	36	clinometer	-	4	thermometer (mercury)	-	-	-	-	-	moderate	dominant	dominant	-	-	-	dominant	-	-	-
140	25	-	25	clinometer	-	8	thermometer (mercury)	-	-	-	-	-	moderate	dominant	-	-	-	-	sub-dominant	-	-	-
141	26	-	26	clinometer	-	8	thermometer (mercury)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
141	31	-	31	clinometer	-	4	thermometer (mercury)	-	-	-	-	-	trace	trace	-	-	-	-	trace	-	-	-
142	30	-	30	clinometer	-	6	thermometer (mercury)	-	-	-	-	-	moderate	dominant	-	-	-	-	sub-dominant	-	1-20%	-
143	35	-	35	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	trace	trace	-	trace	-	-	trace	-	1-20%	-
144	39	-	39	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	trace	trace	-	-	-	-	trace	-	1-20%	-
145	55	-	55	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	trace	sub-dominant	-	-	-	-	dominant	-	1-20%	-
146	78	-	78	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	moderate	dominant	-	-	-	-	dominant	-	41-70%	-
147	28	-	28	clinometer	-	5	thermometer (mercury)	-	-	-	-	-	moderate	dominant	-	-	-	-	-	-	-	-
148	82	-	82	clinometer	-	5	thermometer (mercury)	-	-	-	-	-	abundant	sub-dominant	-	-	-	-	dominant	-	71-90%	-
149	29	-	29	clinometer	-	7	thermometer (mercury)	-	-	-	-	-	abundant	sub-dominant	sub-dominant	-	-	-	dominant	-		-
201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
202	35	-	35	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dashes indicate not applicable or no data available

Appendix 5.1-2. Watercourse Crossing Fish Habitat Data, 2012

	Water												Cover									
Site No.	Gradient 1 (%)	Gradient 2 (%)	Average Gradient (%)	Method (for gradient)	Stage	Temperature (˚C)	Method (for Temperature)	Conductivity (µS/cm)	Method (for conductivity)	pH	Method (for pH)	Turbidity	Total Cover	Small Woody Debris	Large Woody Debris	Boulders	Undercut Banks	Deep Pools	Overhanging Vegetation	Instream Vegetation	Crown Closure	Functional LWD
203	30	-	30	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
204	18	-	18	clinometer	moderate	6	thermometer (mercury)	190	recording meter	8.9	pH meter (general)	Clear	abundant	dominant	sub-dominant	none	none	none	dominant	none	71-90%	abundant
205	15	-	15	clinometer	moderate	6	thermometer (mercury)	240	recording meter	8.4	pH meter (general)	Clear	-	sub-dominant	trace	none	none	none	dominant	none	-	few
206	10	-	10	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
207	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
209	9	-	9	clinometer	moderate	6	thermometer (mercury)	370	recording meter	8.6	pH meter (general)	Clear	moderate	dominant	trace	none	none	none	dominant	none	1-20%	few
210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
211	85	-	85	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
212	25	-	25	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
213	25	-	25	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
214	19	-	19	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
215	21	-	21	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
216	22	-	22	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
217	27	-	27	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
218	23	-	23	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	23	-	23	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	21	-	21	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	22	-	22	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
222	30	-	30	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
223	25	-	25	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
224	45	-	45	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
225	90	-	90	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
226	16	50	33	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
227	99	-	99	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
228	99	-	99	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
229	55	-	55	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
230	50	-	50	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
231	35	-	35	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
232	45	-	45	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	45	-	45	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
234	4	-	4	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
235	22	-	22	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
236	45	-	45	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
237	26	-	26	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
238	32	-	32	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
239	45	-	45	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240	55	-	55	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
241	30	-	30	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
242	37	-	37	clinometer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
243	18	-	18	clinometer	moderate	4	thermometer (mercury)	10	recording meter	7.01	pH meter (general)	Clear	-	dominant	sub-dominant	-	trace	-	sub-dominant	-	1-20%	few

Dashes indicate not applicable or no data available

Appendix 5.1-2. Watercourse Crossing Fish Habitat Data, 2012

	Cover												Morphology							
Site No.	LWD Distribution	Instream Vegetation Type	L. Bank Shape	L. Bank Texture Dominant 1	L. Bank Texture Dominant 2	L. Bank Riparian Vegetation	L. Bank Riparian Vegetation Stage	R. Bank Shape	R. Bank Texture Dominant 1	R. Bank Texture Dominant 2	R. Bank Riparian Vegetation	R. Bank Riparian Vegetation Stage	Bed Material Dominant	Bed Material Subdominant	D95 (cm)	D (cm)	Morphology	Channel Pattern	Coupling	Confinement
100	clumped	-	sloping	fines	-	mixed forest	mature forest	sloping	fines	-	mixed forest	mature forest	cobbles	boulders	35	35	riffle-pool	irregular wandering	decoupled	unconfined
101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
106-2	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	cascade-pool	-	-	-
107	-	-	-	-	-	-	-	-	-	-	-	-	boulders	cobbles	-	-	cascade-pool	-	-	-
108	evenly distributed	-	sloping	fines	-	coniferous forest	mature forest	sloping	fines	-	coniferous forest	mature forest	cobbles	gravels	23	22	cascade-pool	sinuous	decoupled	confined
109	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	cascade-pool	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-	fines	cobbles	-	-	cascade-pool	-	-	-
111	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	fines	-	-	cascade-pool	-	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	-	-	-	-
114	-	-	V-shaped	gravels	boulders	deciduous forest	pole-sapling	V-shaped	gravels	boulders	mixed forest	young forest	boulders	gravels	37	37	cascade-pool	sinuous	decoupled	unconfined
115	evenly distributed	algae	sloping	fines	-	coniferous forest	mature forest	sloping	fines	-	coniferous forest	mature forest	fines	gravels	24	9	step-pool	sinuous	decoupled	occasionally confined
116	-	-	-	-	-	-	-	-	-	-	-	-	fines	-	-	-	-	-	-	-
116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
118	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-	-	-	large rock/bedrock	boulders	-	-	-	-	-	-
121	-	-	-	-	-	-	-	-	-	-	-	-	fines	gravels	-	-	cascade-pool	-	-	-
122	-	-	-	-	-	-	-	-	-	-	-	-	fines	gravels	-	-	cascade-pool	-	-	-
123	-	-	-	-	-	-	-	-	-	-	-	-	fines	cobbles	-	-	-	-	-	-
124	-	-	-	-	-	-	-	-	-	-	-	-	boulders	cobbles	-	-	-	-	-	-
125	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
126	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
127	-	-	-	-	-	-	-	-	-	-	-	-	fines	-	-	-	cascade-pool	-	-	-
128	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
129	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	cascade-pool	-	-	-
130	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	-	-	-	-	-	-	-	fines	-	-	-	cascade-pool	-	-	-
133	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
134	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	cascade-pool	-	-	-
135	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	-	-	-	-
136	-	-	-	-	-	-	-	-	-	-	-	-	fines	gravels	-	-	cascade-pool	-	-	-
137	-	-	-	-	-	-	-	-	-	-	-	-	gravels	fines	-	-	cascade-pool	-	-	-
138	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	-	-	-	-
139	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	cascade-pool	-	-	-
140	-	-	-	-	-	-	-	-	-	-	-	-	fines	gravels	-	-	cascade-pool	-	-	-
141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
141	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	-	-	-	-
142	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	-	-	-	-
143	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	-	-	-	-
144	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	-	-	-	-
145	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	cascade-pool	-	-	-
146	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	boulders	-	-	cascade-pool	-	-	-
147	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	cascade-pool	-	-	-
148	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	cascade-pool	-	-	-
149	-	-	-	-	-	-	-	-	-	-	-	-	fines	gravels	-	-	-	-	-	-
201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dashes indicate not applicable or no data available

Appendix 5.1-2. Watercourse Crossing Fish Habitat Data, 2012

Site No.	Cover												Morphology							
	LWD Distribution	Instream Vegetation Type	L. Bank Shape	L. Bank Texture Dominant 1	L. Bank Texture Dominant 2	L. Bank Riparian Vegetation	L. Bank Riparian Vegetation Stage	R. Bank Shape	R. Bank Texture Dominant 1	R. Bank Texture Dominant 2	R. Bank Riparian Vegetation	R. Bank Riparian Vegetation Stage	Bed Material Dominant	Bed Material Subdominant	D95 (cm)	D (cm)	Morphology	Channel Pattern	Coupling	Confinement
203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
204	evenly distributed	none	V-shaped	fines	-	shrubs	shrub	V-shaped	fines	-	shrubs	mature forest	cobbles	fines	25	8	cascade-pool	sinuous	partially coupled	confined
205	evenly distributed	-	sloping	fines	cobbles	shrubs	mature forest	sloping	fines	cobbles	shrubs	mature forest	cobbles	fines	20	4	cascade-pool	sinuous	-	unconfined
206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
207	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
209	evenly distributed	none	sloping	fines	cobbles	mixed forest	mature forest	sloping	fines	cobbles	mixed forest	mature forest	cobbles	fines	14	4	cascade-pool	sinuous	decoupled	unconfined
210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
213	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
214	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
217	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
221	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
223	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
224	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
227	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
234	-	-	-	-	-	-	-	-	-	-	-	-	fines	cobbles	-	-	-	-	-	-
235	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	fines	-	-	-	-	-	-
236	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	boulders	-	-	-	-	-	-
237	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	fines	-	-	-	-	-	-
238	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	fines	-	-	-	-	-	-
239	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	fines	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	-	-	-	-
241	-	-	-	-	-	-	-	-	-	-	-	-	cobbles	gravels	-	-	-	-	-	-
242	-	-	-	-	-	-	-	-	-	-	-	-	gravels	cobbles	-	-	-	-	-	-
243	evenly distributed	algae	sloping	fines	-	coniferous forest	mature forest	sloping	fines	-	coniferous forest	mature forest	cobbles	gravels	-	-	cascade-pool	sinuous	partially coupled	occasionally confined

Dashes indicate not applicable or no data available

Appendix 5.1-3
Watercourse Crossing Photographs, 2012

Rescan™
Engineers and Scientists

Appendix 5.1-3. Watercourse Crossing Photographs, 2012

Site 100 — Upstream.

Site 100 — Downstream.

Site 100 — Crossing.

Site 103 — NCD.

Site 104 — Upstream.

Site 104 — Downstream.

Site 105 — Dry.

Site 106 — Downstream.

Site 106 — Upstream.

Site 106-2 — Downstream.

Site 106-2 — Upstream.

Site 107 — Upstream.

Site 107 — Downstream.

Site 107 — Crossing.

Site 108 — Downstream.

Site 108 — Upstream.

Site 108 — Crossing.

Site 110 — Downstream.

Site 110 — Upstream.

Site 111 — Downstream.

Site 111 — Upstream.

Site 112 — Downstream.

Site 112 — Upstream.

Site 114 — Downstream.

Site 114 — Upstream.

Site 114 — Crossing.

Site 115 — Downstream.

Site 115 — Upstream.

Site 116 — Downstream.

Site 116 — Upstream.

Site 116-2 — Downstream.

Site 116-2 — Upstream.

Site 117 — Upstream.

Site 117 — Crossing.

Site 118 — Downstream.

Site 118 — Upstream.

Site 119 — Downstream.

Site 119 — Upstream.

Site 120 — Downstream.

Site 120 — Upstream.

Site 121 — Downstream.

Site 121 — Upstream.

Site 122 — Downstream.

Site 122 — Upstream.

Site 123 — Downstream.

Site 123 — Upstream.

Site 124 — Downstream.

Site 124 — Upstream.

Site 124 — Crossing.

Site 125 — Downstream.

Site 125 — Upstream.

Site 126 — Downstream.

Site 126 — Upstream.

Site 127 — Downstream.

Site 127 — Upstream.

Site 128 — Downstream.

Site 128 — Upstream.

Site 129 — Downstream.

Site 129 — Upstream.

Site 130 — Downstream.

Site 130 — Upstream.

Site 131 — Downstream.

Site 131 — Upstream.

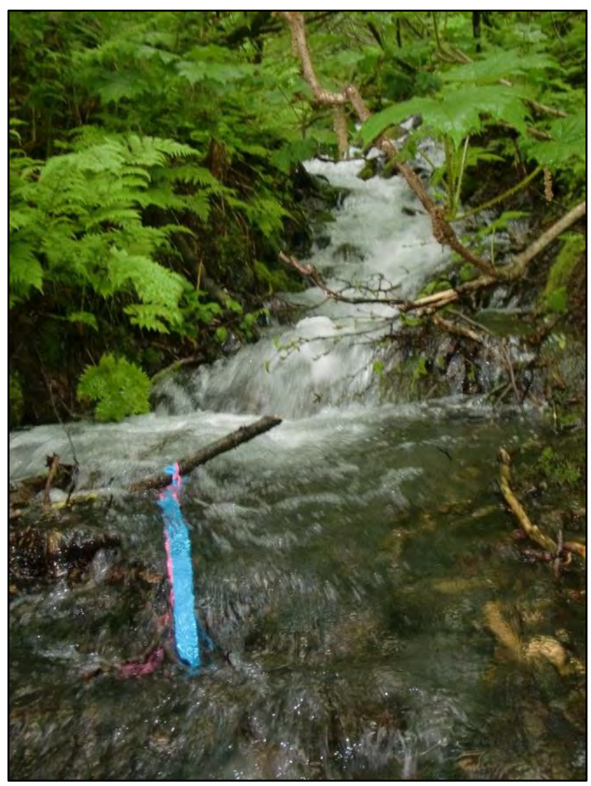
Site 132 — Downstream.

Site 132 — Upstream.

Site 133 — Downstream.

Site 133 — Upstream.

Site 134 — Downstream.



Site 134 — Upstream.

Site 135 — Downstream.

Site 135 — Upstream.

Site 136 — Downstream.

Site 136 — Upstream.

Site 137 — Upstream.

Site 137 — Downstream.

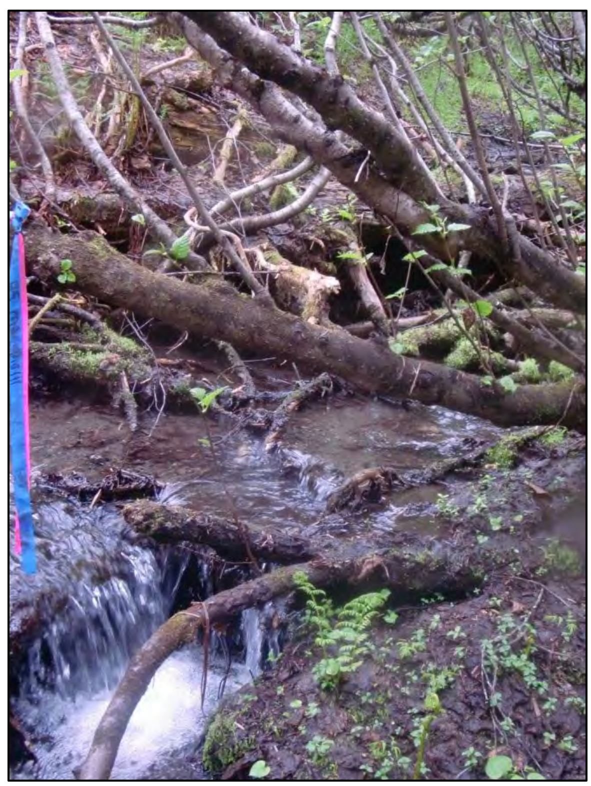
Site 138 — Downstream.

Site 138 — Upstream.

Site 139 — Downstream.

Site 139 — Upstream.

Site 140 — Downstream.



Site 140 — Upstream.

Site 141 — Downstream.

Site 141 — Upstream.

Site 141 — Crossing.

Site 141-2 — Downstream.

Site 141-2 — Upstream.

Site 142 — Downstream.

Site 142 — Upstream.

Site 143 — Downstream.

Site 143 — Upstream.

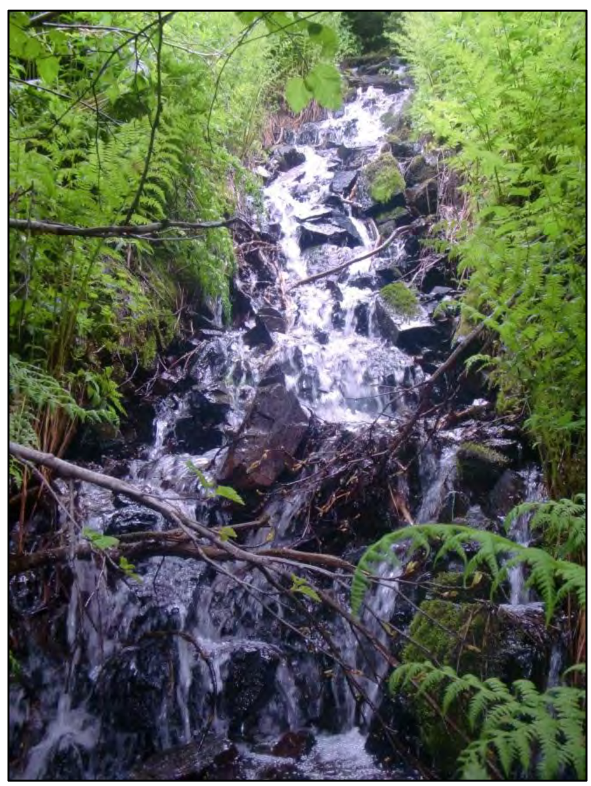
Site 144 — Downstream.

Site 144 — Upstream.

Site 145 — Downstream.

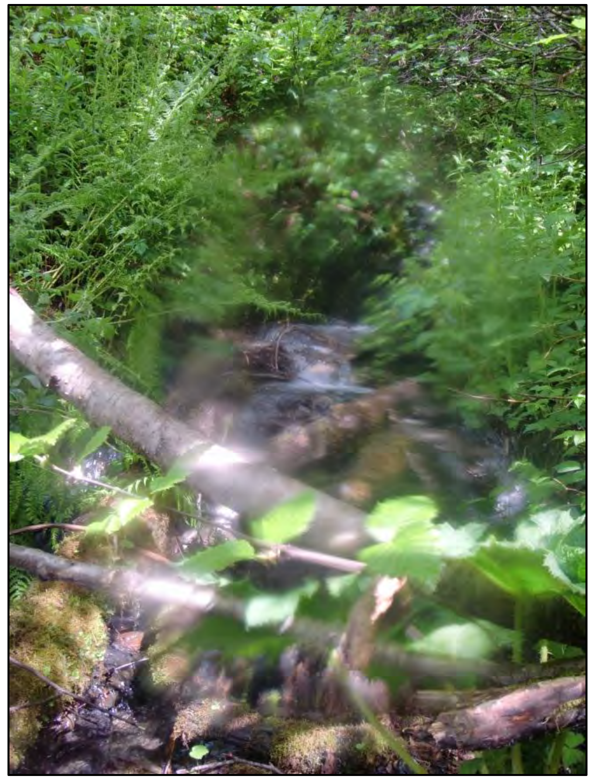
Site 145 — Upstream.

Site 146 — Downstream.



Site 146 — Upstream.

Site 147 — Downstream.



Site 147 — Upstream.

Site 148 — Downstream.

Site 148 — Upstream.

Site 149 — Upstream.

Site 149 — Downstream.

Site 201 — Downstream.

Site 201 — Upstream.

Site 201 — Crossing.

Site 202 — Downstream.

Site 202 — Upstream.

Site 203 — Downstream.

Site 203 — Upstream.

Site 204 — Downstream.

Site 204 — Upstream.

Site 205 — Downstream.

Site 205 — Upstream.

Site 206 — Downstream.

Site 206 — Upstream.

Site 207 — Downstream.

Site 207 — Upstream.

Site 208 — Downstream.

Site 208 — Upstream.

Site 209 — Downstream.

Site 209 — Upstream.

Site 210 — Downstream.

Site 210 — Upstream.

Site 211 — Downstream.

Site 211 — Upstream.

Site 212 — Downstream.

Site 212 — Upstream.

Site 213 — Downstream.

Site 213 — Upstream.

Site 214 — Downstream.

Site 214 — Upstream.

Site 215 — Downstream.

Site 215 — Upstream.

Site 216 — Downstream.

Site 216 — Upstream.

Site 217 — Downstream.

Site 117 — Upstream.

Site 118 — Downstream.

Site 218 — Upstream.

Site 219 — Downstream.

Site 219 — Upstream.

Site 220 — Downstream.

Site 220 — Upstream.

Site 220 — Upstream.

Site 221 — Downstream.

Site 221 — Upstream.

Site 221 — Upstream.

Site 222 — Downstream.

Site 222 — Upstream.

Site 223 — Downstream.

Site 223 — Upstream.

Site 224 — Downstream.

Site 224 — Downstream.

Site 224 — Upstream.

Site 225 — Downstream.

Site 225 — Upstream.

Site 226 — Downstream.

Site 226 — Upstream.

Site 227 — Downstream.

Site 227 — Upstream.

Site 228 — Downstream.

Site 228 — Upstream.

Site 229 — Downstream.

Site 229 — Upstream.

Site 230 — Downstream.

Site 230 — Upstream.

Site 231 — Downstream.

Site 231 — Upstream.

Site 232 — Downstream.

Site 232 — Upstream.

Site 233 — Downstream.

Site 233 — Upstream.

Site 234 — Downstream.

Site 234 — Upstream.

Site 235 — Downstream.

Site 235 — Upstream.

Site 236 — Downstream.

Site 236 — Upstream.

Site 237 — Downstream.

Site 237 — Upstream.

Site 238 — Downstream.

Site 238 — Upstream.

Site 239 — Downstream.

Site 239 — Upstream.

Site 240 — Downstream.

Site 240 — Upstream.

Site 241 — Downstream.

Site 241 — Upstream.

Site 242 — Downstream.

Site 242 — Upstream.

Site 243 — Downstream.

Site 243 — Upstream.

Appendix 5.1-4

Fish Assessment Effort and Catch Data, 2012

Appendix 5.1-4. Fish Assessment Effort and Catch Data, 2012

Site No.	Temperature (˚C)	Conductivity (µS/cm)	Turbidity	Sampling Method	Method No.	Haul or Pass No.	Effort (s)	EF Length (m)	EF Width (m)	Enclosure	Voltage (V)	Frequency (Hz)	Pulse (%)	Make	Model
100	-	-	M	EF	-	-	-	-	-	O	-	-	-	Smith-root	LR24
108	8	100	C	EF	1	1	180	60	3	O	350	50	12	Smith-root	LR24
114	4	90	C	EF	1	1	134	50	1	O	500	30	12	Smith-root	LR24
115	7.5	80	C	EF	1	1	104	80	0.5	O	500	30	12	Smith-root	LR24
243	4	10	C	EF	-	-	-	-	-	O	-	-	-	Smith-root	LR24
204	6	190	C	EF	1	1	125	-	-	O	450	30	-	Smith-root	LR24
205	6	240	C	EF	1	1	102	-	-	O	325	60	-	Smith-root	LR24
209	6	370	C	EF	1	1	90	-	-	O	325	60	-	Smith-root	LR24

Dashes indicate no data available

Turbidity:

C = clear

L = low turbidity

M = moderate turbidity

H = high turbidity

Sampling Method:

EF = electrofisher

Enclosure:

O = open

C = closed

PE = partially enclosed

Appendix 5.1-5
Fish Biological Data, 2012

Appendix 5.1-5. Fish Biological Data, 2012

Site No.	Method	Method Number	Haul or Pass No.	Species Code	Length (mm)	Sex	Maturity
108	EF	1	1	RB	91	Undetermined	Immature
108	EF	1	1	RB	77	Undetermined	Immature
108	EF	1	1	RB	113	Undetermined	Immature
108	EF	1	1	RB	69	Undetermined	Immature

Method:

EF = electrofisher

Species:

RB = Rainbow Trout/steelhead